



Mandatory Greenhouse Gas Reporting Rule: EPA's Response to Public Comments

Volume No.: 42

Mobile Sources

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Mobile Sources

**U. S. Environmental Protection Agency
Office of Atmosphere Programs
Climate Change Division
Washington, D.C.**

FOREWORD

This document provides EPA's responses to public comments on EPA's Proposed Mandatory Greenhouse Gas Reporting Rule. EPA published a Notice of Proposed Rulemaking in the Federal Register on April 10, 2009 (74 FR 16448). EPA received comments on this proposed rule via mail, e-mail, facsimile, and at two public hearings held in Washington, DC and Sacramento, California in April 2009. Copies of all comments submitted are available at the EPA Docket Center Public Reading Room. Comments letters and transcripts of the public hearings are also available electronically through <http://www.regulations.gov> by searching Docket ID *EPA-HQ-OAR-2008-0508*.

Due to the size and scope of this rulemaking, EPA prepared this document in multiple volumes, with each volume focusing on a different broad subject area of the rule. This volume of the document provides EPA's responses to significant public comments received for Mobile Sources.

Each volume provides the verbatim text of comments extracted from the original letter or public hearing transcript. For each comment, the name and affiliation of the commenter, the document control number (DCN) assigned to the comment letter, and the number of the comment excerpt is provided. In some cases the same comment excerpt was submitted by two or more commenters either by submittal of a form letter prepared by an organization or by the commenter incorporating by reference the comments in another comment letter. Rather than repeat these comment excerpts for each commenter, EPA has listed the comment excerpt only once and provided a list of all the commenters who submitted the same form letter or otherwise incorporated the comments by reference in table(s) at the end of each volume (as appropriate).

EPA's responses to comments are generally provided immediately following each comment excerpt. However, in instances where several commenters raised similar or related issues, EPA has grouped these comments together and provided a single response after the first comment excerpt in the group and referenced this response in the other comment excerpts. In some cases, EPA provided responses to specific comments or groups of similar comments in the preamble to the final rulemaking. Rather than repeating those responses in this document, EPA has referenced the preamble.

While every effort was made to include significant comments related to Mobile Sources in this volume, some comments inevitably overlap multiple subject areas. For comments that overlapped two or more subject areas, EPA assigned the comment to a single subject category based on an assessment of the principle subject of the comment. For this reason, EPA encourages the public to read the other volumes of this document with subject areas that may be relevant to Mobile Sources.

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Mobile Sources

1. DEFINITION OF SOURCE CATEGORY

Commenter Name: Filipa Rio

Commenter Affiliation: Alliance of Automobile Manufacturers (Alliance)

Document Control Number: EPA-HQ-OAR-2008-0508-0630.1

Comment Excerpt Number: 5

Comment: We agree with EPA's position that reporting should be on a per vehicle basis (not fleet basis) and limited to certification data vehicles and fuel economy data vehicles.

Response: EPA is not finalizing any of the proposed GHG reporting requirements for light duty vehicles. Instead, we expect to address light duty vehicle GHG reporting as a part of an EPA proposal to set GHG emissions standards for light-duty motor vehicles."

2. MOBILE SOURCE FLEET OPERATORS

Commenter Name: Glen P. Kedzie

Commenter Affiliation: American Trucking Associations, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0715.1

Comment Excerpt Number: 1

Comment: ATA concurs with EPA that mandatory reporting requirements for mobile source fleet operators would not be appropriate at this time and that any relevant information is already available to the agency under the existing greenhouse gas (GHG) reporting mechanisms. There is no need to impose any additional and onerous reporting requirements on medium- and heavy-duty fleets given that trucking is by-and-large an industry comprised of small businesses and that there are already three reporting mechanisms already in existence for trucking under EPA's SmartWay (SmartWay) program, the EPA Climate Leaders program, and the Federal Highway Administration's (FHWA) annual statistics reporting requirements. ATA and trucking fleets helped EPA develop and officially unveil the SmartWay program in February 2004. As a founding charter partner and affiliate member, ATA and its members began voluntarily self-reporting GHG emissions over half a decade ago – far in advance of any mandatory GHG reporting rule discussions. The trucking industry and EPA both agree that SmartWay is one voluntary GHG program that does indeed work in curbing and reporting carbon emissions. SmartWay currently receives data from 1,086 truck carriers, 25 shipper-carriers, 15 non-asset based carriers, and 218 logistics companies. These companies operate 585,000 trucks and travel 51+ billion miles in the U.S. Put another way, these numbers represent nearly 25 percent of all trucks operating in the U.S. and 24 percent of the industry's vehicle miles traveled. Data collected from SmartWay fleet partners includes equipment specifications, fuel consumption, miles traveled, and fuel-efficient technology choices to name a few – important information necessary to evaluate and assess the nature of the trucking industry, carbon footprints, and carbon-reducing technology solutions. EPA's Climate Leaders program also requires participating companies that operate mobile sources to report CO₂ equivalents as a part of their voluntary commitment to develop a comprehensive, corporate-wide GHG inventory. Finally, the FHWA annually publishes its Highway Statistics which tallies U.S. on-highway diesel fuel use,

truck vehicle miles traveled, and tractor and trailer registrations. The trucking industry believes that this information, compounded with the SmartWay and Climate Leaders data, more than negate the need for any additional trucking-related reporting requirements contemplated under the Proposed Rule.

Response: EPA is not including any mandatory reporting requirements for mobile source fleet operators in this final rule. As discussed in the proposed rule, we believe there is sufficient data available from other federal agencies and as part of EPA's voluntary SmartWay Transport Partnership and Climate Leaders programs.

The public comments in this volume will inform EPA's existing programs and any future policies related to fleets.

Commenter Name: James H. I. Weakley

Commenter Affiliation: Lake Carriers Association

Document Control Number: EPA-HQ-OAR-2008-0508-0676.1

Comment Excerpt Number: 1

Comment: As proposed, the rule would exempt vessel operators from the reporting requirement. We endorse this proposal. We do not favor this provision because we have something to conceal. Our emissions are much lower than other modes of transportation. The simple fact is marine engines will be counted and catalogued by the manufacturers, so the EPA will be able to take the manufacturers' measurements and produce a very good estimate of emissions from the maritime sector. Shipboard measurements of emissions would be very difficult to take for a number of reasons. First, the vessels do not carry the sophisticated equipment that would be needed to take scientific measurements. Such equipment would be a major outlay of capital, and as these words are being written, nearly 40 percent of the U.S.-Flag Great Lakes has been idled by the recession. At least four vessels were withdrawn from service just weeks after being activated. The industry will not be able to afford to install measuring equipment on its vessels for the foreseeable future. Lack of space is another issue. The engine rooms are very cramped and full as it is. It would be a real engineering challenge to find the space for measuring equipment. (This is an issue we have also raised as regards installation of ballast water treatment systems.) Another concern is lack of crewmembers with the required skills and time to take these precise measurements. Our Engine Department personnel are second to none, but their job is to keep these giant ships running 24/7. They do not have the expertise or time to dedicate to taking such measurements. We also understand these measuring systems need extensive maintenance and constant calibration, again a demand of our Engine Department. In all probability, the industry would have to hire consultants or contractors to take the measurements and perform maintenance and calibration, another expense, and a housing problem. These vessels are working freighters, not cruise ships. Extra accommodations are not plentiful.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Nancy N. Young

Commenter Affiliation: Air Transport Association of America, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0522.1

Comment Excerpt Number: 15

Comment: With respect to alternative fuels, ATA believes there may be a need in the future to develop a tailored approach, including recognition of an exemption for biomass fuels or partial biomass fuels, which may have different emissions factors (including when measured on a life-cycle basis) than standard jet fuel. That approach should be developed when such alternative fuels are available in the marketplace, based, for example, on the relevant standard IPCC emissions factors (or other generally accepted emissions factors) for those fuels.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: None

Commenter Affiliation: NAFA Fleet Management Association

Document Control Number: EPA-HQ-OAR-2008-0508-0599.1

Comment Excerpt Number: 1

Comment: Because the diverse operating characteristics of fleets make measurement and reporting to EPA not practicable in many situations, NAFA supports EPA's determination not to propose any reporting requirements in this rule for operators of mobile source fleets. NAFA looks forward, however, to working with EPA to encourage fleets to voluntarily measure GHG gas emissions. Fleets should be encouraged to voluntarily measure and report GHG emissions using measurement tools that are adaptable to the operating characteristics of the individual fleet. Climate Leaders and SmartWay are options for some but not all fleets. We fully understand that you have to measure before you can manage your emissions. However, the diverse nature of fleets with respect to vehicles used, miles driven, refueling and data collection makes the measurement of GHG emissions a significant challenge. We have looked at measurement models from Climate Leaders, SmartWay, as well as a new model from the DOE Argonne Labs and found that the emissions calculations are very unit specific, depending on specific miles per unit not just fuel usage. Many NAFA members have worked with Climate Leaders and SmartWay. For example, a colleague who has the task of GHG reporting for Climate Leaders reports that the mapping process for editing and correcting exceptions and bad odometers and estimating fuel use for vehicles not using fuel cards challenge the quality of the data reported. Flexibility in measuring emissions is critical to ensuring maximum participation from fleets and maximum accuracy in the resulting data. NAFA and the Environmental Defense Fund (EDF) have teamed up to create and promote a web-based greenhouse gas calculator to enable fleets to measure their carbon footprint and track progress over time. This tool is designed to minimize data entry needs for fleets – recognizing the challenges of capturing the complete data required by more advanced calculation methods. At the same time, the calculator provides a reasonable degree of accuracy, as its calculations are directly tied to fuel-consumption. Our goal is to encourage fleets to use the NAFA-EDF tool to better understand their current emissions footprint, set and track emission reduction goals, and evaluate “green” fleet activities. The NAFA-EDF fleet greenhouse gas calculator estimates total fleet greenhouse gas emissions from fuel consumption data. This data is directly used to calculate emissions of carbon dioxide (CO₂), which accounts for about 95% of greenhouse gas from vehicles. Emissions of nitrous oxide (N₂O), methane (CH₄), and hydrofluorocarbons (HFCs) are estimated based on their prominence among greenhouse gas from transportation source as reported in the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Paul Dubenetzky
Commenter Affiliation: KERAMIDA Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0419.1
Comment Excerpt Number: 3

Comment: KERAMIDA believes that the U.S. EPA has met the congressional mandate without including the requirement to report emissions from fleets. Lacking a specific legislative mandate, the U.S. EPA should not expand the scope of rule beyond that specified in the proposed rule language in 74 FR 16609-16731.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Steve Russell
Commenter Affiliation: NAFA Fleet Management Association
Document Control Number: EPA-HQ-OAR-2008-0508-02121
Comment Excerpt Number: 2

Comment: There are a lot of small fleets that spew a lot of CO₂, and our concern is that we get our arms around that and be able to report to you what is going on. If you want to make that a requirement of the law, so be it, but we are hoping to have a tool that will assist you. So that when you look at manufacturers and what they are doing, when you look at some of these large corporations, you are going to require that they measure their manufacturing CO₂, they might have 2,000 vehicles that you are not even concerned about, the CO₂ coming out of their tailpipes. You don't want to miss that, I don't think. I think that is important for you to take a look at.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Steve Russell
Commenter Affiliation: NAFA Fleet Management Association
Document Control Number: EPA-HQ-OAR-2008-0508-02121
Comment Excerpt Number: 1

Comment: Our NAFA EDF Calculator focuses on greenhouse gases coming from the tailpipe. Our goal here is to have a tool into which fleet managers can enter their fueling information of various types of fleet vehicles, and the result is a carbon footprint from which he or she can then set measurable CO₂ goals, reduction goals. We looked at other measurement models from the Climate Leaders, SmartWay Freight Logistics, as well as a new model from the DOE "Argonne Labs" -- and found that how the emissions is calculated, it is very specific, meaning very specific miles per unit, not just fuel usage. Let me tell you that as an experienced fleet manager for a national corporate fleet, I could tell you exactly how much fuel -- and milk sometimes -- was used in my fleet, but there were many times when mileage on those expense reports were very inaccurate, unfortunately. These calculators take a wheels-to-wheels approach. The NAFA EDF Calculator is a practical approach, so that we can get fleets on board with calculating their greenhouse gases. So, to this end, NAFA supports that the Federal Government establish and administer a single national program for regulation of vehicle greenhouse gas emissions and fuel economy, that all public and private entities that rely on vehicles to carry out their missions strive to reduce greenhouse gas emissions and are supportive of the move by the EPA to regulate

those greenhouse gas emissions, and NAFA is willing to work with EPA to have a calculator that is practical, so that fleets can be encouraged to achieve performance-based efficiency improvements that reduce greenhouse gas emissions, including improvements in vehicle efficiency.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Helen A. Howes

Commenter Affiliation: Exelon Corporation

Document Control Number: EPA-HQ-OAR-2008-0508-0373.1

Comment Excerpt Number: 16

Comment: Exelon encourages the EPA to incorporate life cycle greenhouse gas emissions from biofuels into any emissions factors it develops for reporting from mobile fleets in order to be as accurate as possible and to be consistent with other current legislation. Recent studies show that the life cycle GHG emissions of some biofuels, such as ethanol, may be higher than originally thought due to land use changes to produce biofuel feedstocks. Because all biofuels are not the same, EPA should develop emissions factors for each type. This is in alignment with the Energy Independence and Security Act of 2007 (EISA), which requires that GHG emissions from renewable fuels be evaluated over the full lifecycle, including production and transport of the feedstock, land use change, production, distribution, and blending of the renewable fuel, and end use of the renewable fuel. Since the overall emissions of biofuels have been a topic of such concern, both in Congress and in the public discourse, EPA's GHG reporting requirements should incorporate the current scientific thinking on this issue to reflect actual emissions as accurately as possible.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Carol E. Whitman

Commenter Affiliation: National Rural Electric Cooperative Association (NRECA)

Document Control Number: EPA-HQ-OAR-2008-0508-0483.1

Comment Excerpt Number: 12

Comment: Exclude Any Requirements for Reporting by Fleet Operators. The draft rule addresses the transportation sector with reporting requirements for providers of transportation fuels and engine and new vehicle manufacturers. While the draft does not require any reporting by the users of the transportation sources, EPA does ask for comment on whether fleet operators should be required to report in Section V.QQ.2 of the preamble. We recommend that EPA not require reporting by fleet operators. For the electricity sector, the fossil-fueled power plants are the primary sources of GHG emissions. These plant emissions comprise well over 90% percent of the sector's GHGs. SF6 emissions from transmission and distribution sectors could make up another few percent. Any GHG emissions from transportation sources would be miniscule in comparison. Any requirements for reporting of transportation fleet emissions by the electricity sector would impose an unreasonable burden. Since it is unlikely that the entities in the sector already collect and compile the data that EPA would require, the reporters would have to develop, test, and implement systems for collecting and compiling that data in accordance with the prescribed protocols. Because these transportation sources are numerous and widely dispersed throughout the reporting entity, collecting the data would be expensive and time

consuming. For both the electricity sector and EPA, the benefit of having data on these de minimis sources would not justify the cost level of effort required for its collection.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Karl Pepple

Commenter Affiliation: City of Houston, Texas

Document Control Number: EPA-HQ-OAR-2008-0508-0699.1

Comment Excerpt Number: 2

Comment: The City operates vehicle fleets. The rule proposed by USEPA is not currently mandating reporting of the emissions from fleet operations. The City encourages additional stakeholder meetings so that the issues that may be associated with such reporting can be identified and considered.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Helen A. Howes

Commenter Affiliation: Exelon Corporation

Document Control Number: EPA-HQ-OAR-2008-0508-0373.1

Comment Excerpt Number: 15

Comment: Exelon recommends including fleet operations as a reported source. We recommend that the EPA require emissions data from mobile source fleet operators because emissions from the transportation sector represent such a significant portion of total US greenhouse gas emissions. This data would aid in development of future rules or programs regarding transportation emissions of the end user and would be consistent with the approach of collecting upstream and downstream data used throughout this rule for other sectors. To minimize the burden on reporting facilities and EPA, reporting could be done on either a facility level or a fleet-wide basis, such that an entire organization's mobile fleet is considered a "facility". Most voluntary greenhouse gas inventory methodologies, including EPA Climates Leaders calculate fleet emissions using fuel consumed to quantify carbon dioxide emissions, while miles driven and vehicle model and year are used to quantify nitrous oxide and methane emissions. The ideal reporting requirement would allow vehicle miles traveled to be estimated from fuel consumption or purchase and vehicle fuel economy similar to the EPA Climate Leaders methodology and would additionally permit the use of simplified emissions factors representing typical fleets or ranges of model years for nitrous oxide and methane calculations rather than requiring each model year to be calculated separately.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: See Table 1

Commenter Affiliation:

Document Control Number: EPA-HQ-OAR-2008-0508-0635

Comment Excerpt Number: 65

Comment: Given the importance of understanding emissions of the existing on-road fleet, (as

opposed to the performance of new vehicles), VMT estimates and other data from state and local governments can play an essential role. Nevertheless, such estimates may not be accurate or of consistent quality across data sources. In order to most appropriately use information collected from disparate states and localities, EPA should systematically assess the data quality across all sources to determine the potential benefit of data quality improvements. Extensive participation in the SmartWay Transport Partnership demonstrates that voluntary fleet performance reporting can provide valuable data about in-use transportation performance. While such reporting need not be compulsory, data quality must be maintained. The voluntary nature of the program should not lead to diminished data quality standards. This and other voluntary reporting programs may be further improved through systematic data quality assessment.

Response: See the response to comments EPA-HQ-OAR-2008-0508-0715.1, excerpt 1 and EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Rasma I. Zvaners

Commenter Affiliation: American Bakers Association (ABA)

Document Control Number: EPA-HQ-OAR-2008-0508-0497.1

Comment Excerpt Number: 11

Comment: EPA's proposal discusses the challenges in avoiding double-reporting both from upstream and downstream sources. ABA supports reporting greenhouse gas emissions from those sources that are within the confines of the facility. For example, the baking industry uses vehicle fleets (delivery trucks and vans) for product distribution nationwide. However, we believe the greenhouse gas emissions from the fleets should not be included in the baker's greenhouse gas emissions assessment. The fleet emissions should be captured by the fuel producer and engine manufacturers as appropriate.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Dana Blume

Commenter Affiliation: Port of Houston Authority (PHA)

Document Control Number: EPA-HQ-OAR-2008-0508-0607.1

Comment Excerpt Number: 14

Comment: EPA asks: "Are there certain categories of mobile sources that should be included or excluded in potential reporting requirements (e.g., lawn mowers, commercial light-duty vehicles, heavy-duty trucks, rail equipment, aircraft, waterborne vehicles)?" PHA believes if there are to be reporting requirements for mobile sources, all modes of transport (truck, rail, waterway, and air), as well as mobile equipment, (off-road vehicles, road construction equipment, cranes, cargo handling equipment, lawn mower equipment, mobile generators, etc.) should be included. In addition, the reporting requirements should have consistent methodologies. Rules and regulations should not create economic inequities among different sources.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: J. P. Blackford

Commenter Affiliation: American Public Power Association (APPA)

Comment: APPA supports EPA's position in the Proposed Rule to not require any reporting of fleet vehicles for State and local governments at this time. APPA offers the following as some additional reasons to exempt municipal fleet vehicles. 1. "Mutual aid" is an extremely good example of why fleet vehicles should not be included in the reporting requirements. "Mutual aid" is a coordinated agreement among electric utilities stating they may be available 24 hours a day, seven days a week to provide personnel, equipment and material assistance during emergencies such as winter ice storms, tornadoes, hurricanes, or other "Acts of God." This aid arrangement is established regionally so that utilities may request assistance from within their state or region. Assistance is not always limited to those areas since crews can travel from anywhere in the continental U.S. to assist when necessary. This assistance is especially valuable to our smaller utilities that may have only a few line worker crews. The fact that fleet vehicle data is being collected and could result in additional local costs might cause fewer communities to become involved in mutual aid, thus delaying the restoration of power after severe weather or other natural disasters. Worse, requiring reporting of these emergency response crews might discourage "mutual aid" agreements, which are the heart and soul of public power as a local or regional response to quickly get systems and their customers (residential, commercial, and industrial) fully operational after a storm. 2. Municipal fleet vehicles also have different configurations. Some are fueled on-site, others at off-site fueling stations, which may not be owned by the municipality. Some vehicles are stored on-site (sometimes at multiple locations), others off-site. Vehicles such as "Trouble Trucks" and other line repair equipment may need to run their engines on-road or off-road to operate hydraulic equipment needed to perform repairs. These widely varying configurations would make it difficult for municipal utilities to report. Existing programs appear sufficient to capture these emissions. The combination of fuel production reporting and engine manufacturer reporting seems sufficient, and the small amount of additional CO₂ emissions reported by "fleet vehicles" would not be significant. 3. It also is unclear how emissions data from a widely differing portfolio of fleet activities could be compared with each other. Should a municipal utility which operates a mass transit bus system, a water system and a natural gas system be compared with a utility that only covers electricity? Will the necessary data synthesis make the results more or less useable?

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Jessica S. Steinhilber

Commenter Affiliation: Airports Council International North America (ACI-NA)

Document Control Number: EPA-HQ-OAR-2008-0508-1063.1

Comment Excerpt Number: 11

Comment: EPA is asking for comment on whether mobile source fleet operators should have to report data. Many airports operate a number of vehicles such as parking shuttles or airside mobile lounges, which feasibly could be included if EPA decides to address vehicle fleets. ACI-NA does not support the inclusion of such reporting. First, the emissions from fleet operations can vary substantially from year to year, depending on fleet inventory, composition, and use. In addition, such a requirement would be extremely onerous and time consuming. The proposed rule also calls for manufacturers of mobile sources and engines to report emissions from the vehicles and engines they produce (includes automobiles and aircraft). If EPA opts to collect data regarding fleet operations, the obligation of airport operators should be restricted to GHG

emission sources they own and control. Other airport-related mobile sources include aircraft, ground support equipment (luggage carts, fueling trucks, etc.), and other vehicles operated by airport tenants. Airports have little to no ability to influence the operation of these sources. In addition, airports are federally preempted from placing restrictions on aircraft operations. They also lack the ability to access data regarding operation of such vehicles.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Jeffrey A. Sitrer

Commenter Affiliation: University of Virginia (UVA)

Document Control Number: EPA-HQ-OAR-2008-0508-0675.1

Comment Excerpt Number: 11

Comment: The Preamble discussion of Subpart QQ on mobile sources states that the proposed definition of the source category only applies to manufacturers of new mobile sources, but seeks comment on inclusion of mobile source fleet operators. Many large facilities have large fleets of vehicles that should be considered as part of their overall emissions. These vehicles can represent a significant source of GHGs. These are direct emissions, resulting from activities supporting facility functions. In all likelihood, most of these facilities already track the fuel usage of these vehicles or at least fuel deliveries, so asking for this information should not be a significant burden. UVA maintains a bus service and several departments have company vehicles; for calendar year 2007 we estimated that 5,456 MTeCO₂ were emitted by the University fleet. We suggest applying the 25,000 MTeCO₂ reporting threshold to include the mobile source fleet category.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Michael Garvin

Commenter Affiliation: Pharmaceutical Research and Manufacturers of America (PhRMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0959.1

Comment Excerpt Number: 8

Comment: PhRMA supports the Agency's decision to exempt company fleets from the proposed rule and believes that EPA is correctly focusing its attention on stationary sources in the GHG reporting rule. PhRMA believes that GHG emissions from mobile sources are best addressed through the use of programs such as the corporate average fuel economy (CAFE) standards for new automobiles that will apply to the automotive industry. Reporting of emissions from fleet vehicles will not provide meaningful data for long-term GHG regulation in the United States.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: B. Lee Kindberg

Commenter Affiliation: Maersk, Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0427.1

Comment Excerpt Number: 2

Comment: EPA requested comment on whether to require mandatory GHG reporting from mobile source fleet operators. The burdens of providing additional information on international vessel and truck fleets to EPA would not be justified by the limited amount of new information those efforts would be expected to deliver. EPA asks, “How would this data be used to inform future climate policy?” 74 Fed. Reg. 16593. Maersk respectfully submits there is no additional relevant information to be gained from requiring fleet operators to report emissions directly that would justify the tremendously increased burdens and inefficiencies imposed on the industry when compared to EPA’s proposal. In fact, there are numerous additional difficulties—technical, operational, and jurisdictional—in seeking such information from fleet operators in addition to those reporters identified in the proposed rule. The logistical difficulties are particularly highlighted in the context of ocean-going vessels, which travel the world, spend only a few days per year within the jurisdiction of any one country, and are routinely redeployed. For example, in the last 6 months, the vessel Sofie Maersk called in Los Angeles on Dec. 6-8, March 21-24, April 28 - May 1, and June 1-4, visiting several countries in Asia between US visits. International vessels are “flagged” in a particular country, and operate under standards set by the UN’s International Maritime Organization (IMO) as well as those of each vessel’s flag administration, the vessel classification societies, and individual port requirements. Applying a patchwork of national or local regulations to international vessels that spend only days of the year in any one jurisdiction and in any given year may move through scores of different jurisdictions would introduce significant burdens on the industry without producing relevant or credible information beyond what the proposed rule would obtain through much more efficient means. The proposed rule properly pursues the right balance, acquiring relevant information about the transportation sector’s GHG emissions in the most efficient way possible (from fuel and manufacturing sources) without subjecting fleet operators to significant additional reporting and recordkeeping burdens. Such additional burden could only be justified if balanced with expanded scope, richness or reliability of data. Thus, the proposed reporting rule appropriately captures the reporting of GHGs from shipping. If in the future, regulators determine a need for information specifically from marine vessel fleets, such requirements would still best be achieved through international protocols that reflect the global nature of the marine shipping industry. While EPA currently regulates vessels flagged and registered in the United States under domestic law, air pollution control requirements for foreign-flagged ships operating in American waters (or elsewhere in the world) are implemented under Annex VI to the International Convention for the Prevention of Pollution from Ships (“MARPOL”), which the US has now adopted. A mandatory measurement and reporting scheme for marine vessel fleet operators utilizing foreign-flagged vessels may only be achievable under MARPOL. The Kyoto Protocol recognized this conclusion by placing the regulation of such emissions under the IMO. IMO’s Marine Environmental Protection Committee (MEPC) is now progressing in their work to define and reduce CO₂ emissions from marine vessels. MEPC efforts now include a proposed Energy Efficient Design Index for new ships, an Energy Efficient Operational Indicator, and other management tools on energy efficiency, as well as a possible Market Based Instrument. EPA’s Office of Transportation Air Quality is involved in this process, and Maersk is supporting IMO efforts directly. We strongly believe that the IMO efforts will continue to progress. Other international initiatives are also underway, including the Copenhagen agreement that is to continue the efforts of the Kyoto Protocol after 2012. These international efforts reinforce the fundamental proposition that any focus on emissions from ships must put primary emphasis on an international effort, with support and consultation from EPA.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: William C. Herz
Commenter Affiliation: The Fertilizer Institute (TFI)
Document Control Number: EPA-HQ-OAR-2008-0508-0952.1
Comment Excerpt Number: 58

Comment: EPA has requested comment on expanding the scope of the NPRM to include reporting of emissions from mobile source fleets. 74 Fed. Reg. at 16,588. Presently, EPA regulates mobile source fleet GHG emissions through fuel efficiency standard requirements. Additionally, the NPRM will address GHG emissions from mobile sources by requiring upstream reporting of fuel producers and manufacturers of mobile sources and engines. As such, additional reporting requirements for mobile source fleets are redundant, unnecessary, and would skew data on GHG emissions already accounted for by reports from upstream emitters. Furthermore, many small businesses operate mobile source fleets, including as outside contractors to larger facilities. Including mobile source fleets would unnecessarily increase costs to small businesses. Finally, mobile source fleet vehicle types and numbers are highly variable and constantly changing. Reporting on such sources would be extremely costly and complicated.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Kathleen Tobin
Commenter Affiliation: Verizon Communications, Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0575.1
Comment Excerpt Number: 5

Comment: Verizon is already working to reduce GHG in its fleet operations by purchasing hybrid sedans and introducing engine idling reduction initiatives. In determining whether or not to require fleet operators to report outside of voluntary programs, the EPA should weigh the need for collecting additional data against what would be gained by going beyond voluntary reporting. If the EPA chooses to set a threshold it should be based on a similar analysis structure as it did for this proposal. By selecting a threshold that includes the majority of emissions, the EPA will be able to collect meaningful data while keeping the burden on smaller emitters to a minimum. If the EPA decides to require the reporting of fleet emissions, then the reporting should be based upon fuel consumption. Companies should also be afforded the flexibility on how to aggregate data. Some State rules have proposed collecting data on vehicles assigned by facility, while other states require the reporting on the vehicles in the State. To avoid duplication of efforts at the state and federal level, the EPA should allow companies to aggregate fleet data in a manner that is efficient for the regulated community. Flexible options will still provide companies an opportunity to better understand their carbon footprint without making the reporting overly burdensome. A company's use of more efficient vehicles will naturally be reflected in its lowered fuel consumption.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Dana Blume
Commenter Affiliation: Port of Houston Authority (PHA)
Document Control Number: EPA-HQ-OAR-2008-0508-0607.1
Comment Excerpt Number: 13

Comment: EPA asks: “Should fleet operators be required to report to EPA outside of voluntary participation in the SmartWay or Climate Leaders programs?” The PHA has engaged and will continue to engage in voluntary programs, such as participation in SmartWay as well as other user-side initiatives. The PHA puts a high value on empirical data; however, at this time, additional (reporting) requirements would distract from implementation efforts to reduce emissions and divert from the tasks of actualizing reduction measures. The PHA recommends prioritizing goals using level of effort, cost effectiveness, and the likelihood of success for determining future climate policy. It is the PHA’s experience that the most efficient and effective way to reduce emissions from intermodal sources is through consistent and reasonable requirements that are national in scope. Since goods move internationally through ports, it is imperative to develop one set of standards across states and countries to reduce the potential for re-routing of goods through regulatory favorable ports. If the economics and regulations at one U.S. port are more favorable over another U.S. port, then commerce and the associated emissions will simply change geography. Therefore, the PHA urges EPA to prioritize regulatory requirements to encourage implementation and provide universal (common) regulations.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: B. Lee Kindberg

Commenter Affiliation: Maersk, Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0427.1

Comment Excerpt Number: 4

Comment: For most mobile sources, the key data needed to understand and manage GHG emissions are those already available directly from fuel use (for CO₂) and engine performance (for the much smaller quantities of N₂O and methane). This is true for Marine vessels as well as land-based mobile sources. The Agency’s proposal addresses this need in the most cost-effective way. Requiring reporting of, for example, miles traveled for marine vessels would lead to complex questions of jurisdictions, without providing significant useful information. One purpose of the proposed rule is to enable EPA to track trends in GHG emissions year to year and to compare different types of sources. The approach taken by the Agency enables this capability while avoiding the complexity of tracking individual vessel or fleet redeployments. Introducing additional complexity and variability into the process would potentially make such comparisons less accurate, less understandable, and less useful for drawing any meaningful conclusions. Fuel is often a very substantial fraction of a company’s variable operating costs. By using aggregated fuel data in coordination with Department of Transportation and other existing operational resources, EPA also avoids the challenge of dealing with highly sensitive business confidential and competitive information for individual companies. EPA also asks whether mandatory measurement and reporting regulations should include both public and private fleets, private fleets only or public fleets only. This request for comment appears to be aimed at vehicle fleets, not marine vessel fleets. In either case, however, this is a moot point if the recommended fuel use and engine performance approach is adopted and all fuel use is reported by the supplier.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Marcelle Shoop

Commenter Affiliation: Rio Tinto Services, Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0636.1

Comment Excerpt Number: 41

Comment: EPA seeks comment on the need to collect in-use travel activity and other emissions-related data from States, local governments, and mobile source fleet operators. (74 Fed. Reg. at 16586) Rio Tinto supports EPA's decision not to collect such data. Given that fuel suppliers will be required to report CO₂ emissions that would result from the complete combustion or oxidation of each petroleum product produced, requiring mobile fleet operators to report the same emissions would not provide additional useful information.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Dana Blume

Commenter Affiliation: Port of Houston Authority (PHA)

Document Control Number: EPA-HQ-OAR-2008-0508-0607.1

Comment Excerpt Number: 18

Comment: EPA asks: "For potential reporting requirements, are there preferred emissions quantification methods other than those presented in the SmartWay Freight Logistics Environmental and Energy Tracking model or the Climate Leaders reporting protocol? The PHA believes an international effort to address GHGs from ocean-going commercial marine vessels is the best approach. The PHA is working with its trade associations to spur this effort forward. Approximately 91% of all vessels calling on the Port of Houston are foreign flagged. International treaties, the Commerce Clause and other legal underpinnings may make it difficult, if not impossible, to regulate foreign vessels. International consistency is needed so that cargo is not diverted to other countries, emissions of vessels while in transit are controlled, and marine vessels are held to consistent standards in the various jurisdictions they serve. The PHA is working hard to encourage the development of international vessel standards. The PHA urges EPA, the Administration, and Congress to continue to work with and through the international community to develop reporting requirements and standards. Going it alone could significantly burden international trade and not provide the emission reductions that are desired—especially if cargo is simply re-routed to more favorable jurisdictions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Kerry Kelly

Commenter Affiliation: Waste Management (WM)

Document Control Number: EPA-HQ-OAR-2008-0508-0376.1

Comment Excerpt Number: 34

Comment: We believe upstream reporting by vehicle manufacturers and fossil fuel producers will result in the most accurate reporting. WM operates a fleet of more than 22,000 vehicles, most of which are refuse collection vehicles. While it is a straightforward exercise to estimate carbon dioxide emissions from combusting fossil fuels in these vehicles based on fuel purchase data, it is a far more complicated exercise to estimate nitrous oxide and methane emissions from vehicles. The calculation methodologies for methane and nitrous oxide emissions require information on model year and data on miles per gallon from each vehicle. WM, like most waste management companies does not track miles per gallon data for each vehicle in the fleet, because

of the unique drive cycle of refuse collection vehicles. Due to frequent stopping and starting, and because nearly 30 percent of vehicle fuel is used to operate auxiliary equipment such as trash compactors and automated arms for retrieving trash containers, miles per gallon is not a representative measure of fuel use. EPA will gain far more accurate information by relying on reporting from vehicle manufacturers and fuel producers.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Robert N. Steinwurtzel

Commenter Affiliation: Bingham McCutchen LLP on behalf of Association of Battery Recyclers (ABR)

Document Control Number: EPA-HQ-OAR-2008-0508-0660.1

Comment Excerpt Number: 17

Comment: Mobile source fleet operators can provide data including fuel consumption, which can be converted into CO₂ emissions, distance traveled, and the number and/or weight of passengers and freight transported. EPA currently collects data from mobile source fleet operators from sources that include U.S. Department of Transportation ("DOT") surveys, in-use testing as part of vehicle and engine manufacturer compliance programs, ad-hoc internal and external field studies and surveys, and voluntary programs such as the SmartWay Transport Partnership and EPA's Climate Leaders program. In addition, DOT collects and releases extensive data from rail and aircraft operators. In light of the existing data available, EPA is not proposing to require data collection or GHG emissions reporting by mobile source fleet operators in the Proposed Rule. The ABR agrees that the existing available data is adequate for estimating GHG emissions from mobile sources, and supports the exclusion of required reporting by mobile source fleet operators from the Proposed Rule.

Response: See the response to comments EPA-HQ-OAR-2008-0508-0715.1, excerpt 1 and EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Michael Bradley

Commenter Affiliation: The Clean Energy Group (CEG)

Document Control Number: EPA-HQ-OAR-2008-0508-0479.1

Comment Excerpt Number: 12

Comment: EPA is proposing that manufacturers of mobile sources and engines report emissions from the vehicles and engines they produce in terms of a general emissions rate rather than per source. However, EPA is soliciting comment whether fleet operators should be required to report greenhouse gas emissions under this proposed rule. The Clean Energy Group supports excluding mobile source fleet emissions at this time, but does generally support accounting for mobile source emissions economy-wide, either through EPA's proposed emissions rate method or through inclusion of fleets at a later date.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Dana Blume

Commenter Affiliation: Port of Houston Authority (PHA)

Document Control Number: EPA-HQ-OAR-2008-0508-0607.1

Comment Excerpt Number: 16

Comment: EPA asks: “Are there certain categories of fleets that should be included or excluded from potential reporting requirements (e.g., public fleets versus private fleets)?” Public and private fleets should both be included in potential reporting requirements. If either one or the other were excluded from regulations, the sense of equity and earnestness of emission reduction measures would be compromised. The PHA seeks and believes effective emission reduction measures often involve public / private partnerships for implementation.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: James Vosburgh

Commenter Affiliation: West Valley Construction

Document Control Number: EPA-HQ-OAR-2008-0508-0228c

Comment Excerpt Number: 1

Comment: There is no such thing as a typical fleet. You can consider the following: fleets may contain cars, vans, SUVs, pickups, medium and heavy duty trucks, utility vehicles and specialty vehicles, et cetera. Fleet vehicles may be hybrids. They may use gasoline, diesel, CNG, propane or even renewable blends such as B20 or E85. Refueling can take place at central fueling locations owned and operated by the fleet, at a central fueling location owned and operated by a third party, using a commercial credit card at a retail facility or using a fuel card at a retail facility. Additionally, a lot of construction equipment is fueled out of a mobile fuel truck on-site. Vehicles may return daily to a central terminal; or in the case of a national sales fleet, they may never return to the central facility.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Steven M. Maruszewski

Commenter Affiliation: Pennsylvania State University (Penn State)

Document Control Number: EPA-HQ-OAR-2008-0508-0409.1

Comment Excerpt Number: 6

Comment: Penn State agrees with the exclusion of mobile sources/fleets and other travel activity. This approach is appropriate. Emissions calculations from these sources have many variables and due to this complexity to accurately calculate, document and report emissions would be unduly burdensome.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: James Vosburgh

Commenter Affiliation: West Valley Construction

Document Control Number: EPA-HQ-OAR-2008-0508-0228c

Comment Excerpt Number: 3

Comment: MR. VOSBURGH: We support the voluntary participation.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: James Vosburgh

Commenter Affiliation: West Valley Construction

Document Control Number: EPA-HQ-OAR-2008-0508-0228c

Comment Excerpt Number: 2

Comment: Fleets should be encouraged to voluntarily measure and report GHG emissions, using measurement tools that are adaptable to the operating characteristics of the fleet. Climate Leaders and Smart Way are reporting options that are good for some but not all fleets. We fully understand that you have to measure before you can manage your emissions. However, the diverse nature of fleets with respect to vehicles used, miles driven, refueling data collection makes the measurement of greenhouse gas emissions a significant challenge. We've looked at measurement models from Climate Leaders, SmartWay as well as the new model from DOE argon labs and found that emissions calculations are very unit specific, depending on the miles per unit. Not just fuel usage. Many NAFA members have worked with Climate Leaders and SmartWay. For example, my colleague who has a task of greenhouse gas emissions reporting for Climate Leaders reports that the mapping process for editing and correcting exceptions and bad odometers and estimating fuel use for vehicles that don't use fuel cards, challenge the quality of the data reported. So flexibility in measuring emissions is critical to ensuring maximum participation from fleets and maximum accuracy in the resulting data. NAFA and the Environmental Defense Fund have teamed up to create and promote a web-based greenhouse gas calculator to enable fleets to measure their carbon footprint and track the progress over time. The tool is designed to minimize data entry needs for fleets, recognizing the challenges of capturing complete data required by more advanced collection methods. At the same time the calculator provides a reasonable degree of accuracy and its calculations are directly tied to fuel consumption. Our goal is to encourage fleets to use the NAFA/EDF tool to better understand our current emissions footprint, set and track emission reduction goals and evaluate the green fleet activities. The NAFA/EDF fleet greenhouse gas calculator estimates total fleet greenhouse gas emissions from fuel consumption data. This data is directly used to calculate emissions of carbon dioxide, which accounts for 95 percent of greenhouse gas from vehicles. Emissions of nitrous oxide, methane, hydrofluorocarbons are estimated based on the prominence among greenhouse gas from transportation source as reported in the inventory of U.S. greenhouse gas emissions and sinks, 1990 to 2006. The NAFA/EDF calculator allows the fleet manager to choose between three profiles that best fits their fleet and data systems. Profile one is for diverse fleets which are able to break their data down to the vehicle type level. For this profile fleet managers will be asked to add the fuel consumption by three vehicle classes: passenger cars, light duty trucks, vans and SUVs and medium and heavy duty trucks over 8,500 pounds. We have excluded buses for the time being due to the lack of clarification as to what specific size of buses the EPA included in their data. Profile two is for light duty fleets that don't distinguish fuel consumption data by vehicle type. This consists of cars and SUVs and light duty trucks. For this profile, fleet managers will be able to estimate their emissions by entering in the combined fuel consumption of all of the vehicles in these two classes. Profile three is for fleet managers that have a diverse fleet, like mine, and are unable to track fuel consumption by vehicle type. They will enter the total fuel consumption and enter the calculation from there. The SmartWay and Climate Leaders tools take a wells-to-wheels approach. The NAFA/EDF calculator is a practical approach so that we can get fleets on board with measuring and then managing their greenhouse gases. NAFA looks forward to working with EPA on voluntary efforts that are practical.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Glenn Hamer

Commenter Affiliation: Arizona Chamber of Commerce and Industry

Document Control Number: EPA-HQ-OAR-2008-0508-0564.1

Comment Excerpt Number: 7

Comment: The Arizona Chamber concurs with EPA that mandatory reporting requirements for mobile source fleet operators would not be appropriate at this time and that most of the relevant information for Climate Change Policy makers can be obtained from other sources such as the identified Smart Way and Climate Leaders program. The Arizona Chamber asks that there be serious consideration of important factors associated with mobile sources so that there is a clear indication that the goals of any reporting requirement can be met and that the information acquired in a reporting requirement can be justified, uniform and consistent throughout the affected mobile source industry. We will limit our comments to mobile sources involved in interstate motor carriers and freight trucks used by our members. We will not include comments relevant to passenger vehicle fleets whose emissions standards would be addressed in the adoption of CAFÉ standards. There are more than 600,000 interstate motor carriers in the United States, which haul nearly every consumer good at some point in the supply chain. Trucks deliver nearly 70 percent of all freight tonnage and that 80 percent of the nation's communities receive their goods exclusively by truck. Roughly 96 percent of motor carriers have 20 or fewer trucks and are considered small businesses. The Arizona Chamber believes that any additional reporting requirements on medium- and heavy-duty fleets is unnecessary given that there are three mechanisms already in existence (EPA's SmartWaySM program, the EPA Climate Leaders program, and the Federal Highway Administration's (FHWA) annual statistics reporting requirements). For example, the EPA Smart WaySM program currently receives data from 1,086 truck carriers, 25 shipper-carriers, 15 non-asset based carriers, and 218 logistics companies. These companies operate 585,000 trucks and travel 51+ billion miles in the U.S. These numbers represent nearly 25 percent of all trucks operating in the U.S. and 24 percent of the industry's vehicle miles traveled. In addition, EPA's Climate Leaders program also requires participating companies that operate mobile sources to report CO₂ equivalents as a part of their voluntary commitment to develop a comprehensive, corporate-wide GHG inventory. Lastly, the FHWA annually publishes its Highway Statistics which tallies U.S. on-highway diesel fuel use, truck vehicle miles traveled, and tractor and trailer registrations. The Arizona Chamber believes that this information, compounded with the Smart Way SM and Climate Leaders data, achieves the goals of emissions reporting that the proposed rule seems to require of non-mobile sources. The Arizona Chamber supports the effort of the trucking industry to improve fuel economy and efficiency for trucks and to work with federal and state policymakers and regulators to push manufacturers to advance new technologies and engine/tractor/trailer designs that are economically and technologically feasible. The Arizona Chamber believes that if the goals of a proposed rule are to be justified, uniform and consistent, we would encourage a thorough review of the scope and breadth of the proposed rule. In terms of metrics, any metrics for mobile sources under consideration by either the U.S. Department of Transportation or EPA need to be harmonized and account for the diverse nature of the trucking industry, the wide variations in work applications and load types, classes of vehicle, etc. A one-size-fits-all metric is not only ill-advised, but non-attainable. There are at least two substantive metrics for quantifying what trucks haul, those being volume and weight with the far more important of the two being volume. Metrics for both cubic foot and ton-mile would be needed. The average single combination

vehicle (of the hundreds of millions weighed in 2008) traversing weigh-in-motion scales totaled a mere 54,000 pounds, far shy of the maximum 80,000 gross vehicle weight limit. The overwhelming conclusion that can be drawn is that trucks haul far more cubic feet than tons. Hence, using a single ton-mile metric for all truck operations would be misleading and simply bad public policy.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Amadeo Saenz

Commenter Affiliation: Texas Department of Transportation (TxDOT)

Document Control Number: EPA-HQ-OAR-2008-0508-0441.1

Comment Excerpt Number: 5

Comment: EPA requested comment on what types of data should operators report (e.g., fuel consumption for estimating CO₂ and non-road N₂O and CH₄ emissions; mileage and vehicle technology for estimating on-road N₂O and CH₄ emissions; efficiency metrics such as emissions per tons carried) TxDOT is not commenting on the specifics of what data should be reported. However, TxDOT currently collects the following information: annual VMT for on-road vehicles, annual hours usage for off-road equipment and annual fuel quantity for each. Obviously additional reporting requirements would have additional resource implications on fleet operations for public and or private entities.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Dana Blume

Commenter Affiliation: Port of Houston Authority (PHA)

Document Control Number: EPA-HQ-OAR-2008-0508-0607.1

Comment Excerpt Number: 17

Comment: EPA asks: "If reporting requirements were to be introduced, what types of data should operators report (e.g., fuel consumption for estimating CO₂ and non-road N₂O and CH₄ emissions; mileage and vehicle technology for estimating on-road N₂O and CH₄ emissions; efficiency metrics such as emissions per tons carried)? EPA's current and proposed rules and regulations should be implemented, practiced and examined for efficacy before EPA writes any new rules or regulations, and any new reporting requirements from mobile sources should be in connection with verification of emission reduction implementation efforts. According to EPA's documentation, new marine inventory techniques have been developed as part of the rulemaking process for emission standards for commercial marine diesel engines. These techniques, similar to the techniques used for mobile sources generally, rely on emission factors, population estimates, and usage characteristics. Additionally, NONROAD2008, a major update of the NONROAD model, calculates past, present, and future emission inventories; fuel types included in the model are: gasoline, diesel, compressed natural gas, and liquefied petroleum gas and estimates exhaust and evaporative hydrocarbons (HC), carbon monoxide (CO), oxides of nitrogen (NO_x), particulate matter (PM), sulfur dioxide (SO₂), and carbon dioxide (CO₂). Techniques to update marine inventories and to develop marine components for the MOVES model should provide the foundation for a new marine inventory guidance document, including more research into emission factors, population, and operating characteristics.

Response: See the response to comments EPA-HQ-OAR-2008-0508-0715.1, excerpt 1 and EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Jeff A. Myrom
Commenter Affiliation: MidAmerican Energy Holdings Company
Document Control Number: EPA-HQ-OAR-2008-0508-0581.1
Comment Excerpt Number: 57

Comment: Given the number of sources in the transportation sector and the wide variety of activities performed by vehicle fleets, MidAmerican believes that gathering such data is not the best course of action. The best source of transportation sector emissions is upstream data gathered by fuel suppliers and vehicle manufacturers. Migrating data collection downstream will only result in increasing data complexity and reporting and analysis costs. MidAmerican does not believe that the EPA should require States, local governments, or other entities to report additional travel activity or emissions-related data beyond what is required under the existing reporting requirements.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: B. Lee Kindberg
Commenter Affiliation: Maersk, Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0427.1
Comment Excerpt Number: 6

Comment: For US mobile sources, maintaining fuel consumption and fuel type records for five years should be adequate and is consistent with record keeping requirements under the Clean Air Act.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Kipp Coddington
Commenter Affiliation: Alston and Bird LLP
Document Control Number: EPA-HQ-OAR-2008-0508-0645.1
Comment Excerpt Number: 1

Comment: AALA members provide comprehensive fleet consulting and management services to commercial, non-profit, and even some governmental organizations. The range of services includes: (1) selecting and acquiring the most appropriate and cost-effective vehicle for the particular work to be performed; (2) assisting in operating and maintaining those vehicles safely and economically, including designing and implementing fueling, maintenance, and safety programs, as well as ensuring compliance with State and local registration and operating requirements; and (3) reclaiming, at the end of the lease, the highest value from the vehicle through auction, public sale, or other disposal, and putting into the public market well-maintained vehicles that have significant remaining useful life. Managed fleets provide tangible fuel economy (and commensurate GHG benefits) over general population vehicles because fleets are managed to extract the maximum economic value from each vehicle. A 2008 study found

that, in comparison to driver reimbursement programs (which are the alternate way in which business fleets may organize themselves), managed fleets provide energy savings of 10%, resulting in reductions of (in 2007) (i) 430 million gallons of fuel, and (ii) 4.2 million tons of carbon dioxide emissions.[Footnote: Energy and Environmental Benefits: Managed Fleets versus Driver Reimbursement, Michael L. Telson and James T. Bruce III (2008).] Managed fleets provide these tangible energy and environmental benefits because: 1. Fleet vehicles are better maintained, on average, than general population vehicles. For economic and other reasons, fleets ensure that vehicles and their subsystems, such as emission control equipment, are properly inspected and maintained. Regular vehicle inspection and maintenance provide numerous benefits, including enhanced safety, improved emission performance, and better fuel economy. Properly maintained vehicles emit less pollution and consume less fuel. In contrast, general population vehicles tend to be poorly maintained, even when they are operated in regions of the country that are subject to Clean Air Act requirements relating to vehicle inspection and maintenance. 2. Fleet vehicles are "right-sized." Vehicle size is an important factor in determining how much fuel a vehicle consumes. Managed fleets carefully select their vehicles to be no larger than is necessary for the task at hand, in large measure to conserve fuel and thus reduce costs. In contrast, the general population tends to acquire vehicles that may be larger than necessary (such as sport utility vehicles) or without regard to a vehicle's fuel economy. These benefits are imperiled if fleets are regulated in a way that compels businesses to conclude that it is cheaper and easier to convert to driver reimbursement programs.[Footnote: A 2004 study found that businesses were cost sensitive when deciding whether to use a managed fleet or a driver reimbursement program for their business vehicle needs. A Comparison of Company-provided and Employee-provided Business Vehicles, Deloitte and Touche L.L.P. (2004).] Driver reimbursement programs operate by the employee using his or her own vehicle for business purposes, then seeking financial reimbursement from the employer for such business use. Available data suggests that personal vehicles are neither properly maintained nor "right-sized" for the task at hand, as EPA is well aware.[Footnote: See EPA's Green Vehicle Guide, <http://www.epa.gov/greenvehicles/Wcyd.do>.] Finally, fleet management companies are innovative and using market forces to tackle many of the issues raised in the proposed rule.[Footnote: For more information about the carbon reduction actions of the commercial fleet leasing industry, see the description by DOE at 73 Fed. Reg. 13,732 (2008)]

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Nancy N. Young

Commenter Affiliation: Air Transport Association of America, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0522.1

Comment Excerpt Number: 13

Comment: As a general matter, ATA believes that annual fuel consumption figures can provide an accurate, verifiable and readily implemented methodology for generating fuel consumption data in any final reporting scheme. However, should EPA include aircraft fleet in the registry, the Agency should not require reporting based on fuel consumption data on per flight basis, as that would conflict with the existing Form 41 program and impose an excessively complex and burdensome set of data collection and reporting requirements that would not serve any reasonable regulatory purpose. Moreover, reporting fuel consumption on a less than aggregate basis would implicate problematic confidential business information concerns, described more fully in the next section of these comments. In fact, total annual fuel consumption figures for carrier operations can provide an overall accuracy level that is comparable to flight-by-flight fuel

consumption measurement and data collection, but at dramatically lower costs and with far less administrative burden. Fuel metering and fuel mass data is an essential safety and operational consideration, and both fuel meters and aircraft monitoring equipment provide data that are sufficiently accurate across an operator's annual reporting year for emissions monitoring and reporting purposes, without the need to introduce further complexity or uncertainty factors into the system. It would be unreasonable to impose more stringent measurement and monitoring requirements regarding fuel consumption than those already imposed under DOT's tightly regulated and stringent aviation safety measures.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Nancy N. Young

Commenter Affiliation: Air Transport Association of America, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0522.1

Comment Excerpt Number: 12

Comment: U.S. commercial air carriers are currently subject to the world's most comprehensive aviation-related data reporting obligations. Carriers (including foreign air carriers operating to and from the United States) are required to report data to the U.S. Department of Transportation's ("DOT") Office of Airline Information ("OAI") on "Form 41" based on distance information specified by DOT. That data is in turn derived from a DOT-maintained website that combines a master coordinate file with the degrees, minutes and seconds of latitude/longitude for each airport with an algorithm that uses those coordinates to calculate the great circle distance ("GCD") for the selected city pair. This includes a mileage calculation value based on standard city pair mileage data. The Form 41 databases include traffic data (passenger and cargo), capacity data and other operational data, including monthly traffic and operational data for each city-pair market that the carrier operated, and monthly traffic, capacity and operational data for each aircraft type that the airline flew in each city-pair flight stage. These data files are not based on sampled data or data surveys, but rather on a direct census of data. Carriers also submit monthly reports on domestic and international fuel consumption. Information about these databases - and about OAI's data collection systems and techniques for correcting data errors, for verification, and for validation - is set forth in the Bureau of Transportation Statistics ("BTS") Publications regarding Form 41. [Footnote: See http://www.bts.gov/programs/statistical_policy_and_research/source_and_accuracy_compendium/form41_schedule.html.] As a general matter, ATA believes that the most appropriate approach is the one suggested by EPA in its proposal, i.e., that it obtain any "upstream" data relevant to fuel and "downstream" data relevant to aircraft GHG emissions from the fuel providers and aircraft manufacturers, respectively. To the extent EPA should seek any further "downstream" data collection and reporting practices with respect to aircraft fleets, EPA should, as suggested in the Preamble, rely on the data collection and reporting practices under Form 41. In this regard we note that information on existing databases used for Form 41 reporting, and alternative data templates used by airlines that submit data under Form 41, can be found in Chapter 8 of the BTS airline traffic reporting guide. [Footnote: See http://www.bts.gov/programs/airline_information/traffic_reporting_guide/pdf/entire.pdf.] In addition, the U.S. Department of Transportation is preparing to roll out a new platform for electronic reporting for all carriers required to file under Form 41. Thus, to the extent any aircraft fleet reporting is to be required, it should be from Form 41 and compatible with its electronic reporting platform.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Melinda L. Tomaino

Commenter Affiliation: Associated General Contractors of America (AGC)

Document Control Number: EPA-HQ-OAR-2008-0508-0628.1

Comment Excerpt Number: 11

Comment: AGC supports EPA's decision not to collect fleet-wide, in-use emissions data (e.g., vehicle miles traveled) from fleet operators. Vehicle miles traveled do not produce viable estimates of emissions as much is dependent on make and model of the vehicle, maintenance, and traffic congestion. The administrative burden of such a program would be cost-prohibitive, especially as emissions from vehicles are accounted for elsewhere in the proposed rule by manufacturers and fuel suppliers.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Kipp Coddington

Commenter Affiliation: Alston and Bird LLP

Document Control Number: EPA-HQ-OAR-2008-0508-0645.1

Comment Excerpt Number: 4

Comment: We believe that EPA should consider the quantity of data to be gathered in the event that fleet operators are included in the rule's scope. Although the commercial fleet leasing industry is important and generates tangible energy and environmental benefits, it is miniscule in comparison to the general population vehicles, which of course constitute the vast majority of transportation-related GHG emissions. The U.S. Department of Energy (DOE) reached a similar conclusion in its recently concluded rulemaking that found that imposition of an alternative vehicle mandate on private fleets under the Energy Policy Act of 1992 (EPAct) was not "necessary" to achieve EPAct's modified fuel replacement goal. 73 Fed. Reg. 13,729 (2008). A key factor in DOE's decision was the fact that, at the end of the day, regulating fleets just wouldn't make a difference to nationwide fuel consumption patterns (and thus GHG emissions). Fleets are not a valid proxy for transportation emissions, in other words, and to the extent that EPA needs information about general population vehicles, it is already getting such data through the "upstream" approach set forth in the proposal.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Mark R. Vickery

Commenter Affiliation: Texas Commission on Environmental Quality (TCEQ)

Document Control Number: EPA-HQ-OAR-2008-0508-0666.2

Comment Excerpt Number: 13

Comment: The Executive Director of the TCEQ does not support that fleet operators be required to report to the EPA outside of voluntary participation in existing programs, such as SmartWay and Climate Leaders. Fleet vehicle activity is already accounted for in the activity values produced for inventory development in transportation planning models used by metropolitan planning organizations. The collection of fleet activity data would create a reporting burden to

state and local governments and smaller businesses without providing a clear benefit.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Kipp Coddington

Commenter Affiliation: Alston and Bird LLP

Document Control Number: EPA-HQ-OAR-2008-0508-0645.1

Comment Excerpt Number: 7

Comment: Should fleet operators be required to report to EPA outside of voluntary participation in the SmartWay or Climate Leaders programs? We commend EPA for its voluntary initiatives such as the innovative SmartWay and Climate Leaders programs because they encourage corporate behavior in a cost-effective, market-driven way. We believe that fleet operators should continue to be allowed to participate in such programs, that such participation should not be made mandatory, and that fleet operators should not be required to report outside of said voluntary participation. The success of and widespread support for such initiatives is evidence of their success. EPA correctly notes that the SmartWay and Climate Leaders programs already are providing the Agency with ample data.[Footnote: Although not "fleet operator" data per se, the Carbon Disclosure Project (CDP) recently broadened its data collection to include more mobile source information. In 2009, CDP extended its Information Request to include questions aimed at the automobile and auto component manufacturing industries. In particular, the CDP Questionnaire Automotive Supplement 2009 includes a request for sales-weighted carbon dioxide emissions expressed in g CO₂ per mile for different vehicle categories.] We recognize that the SmartWay program is focused on freight transportation; several years ago, AALA offered to work with the Agency to develop a light-duty/commercial leasing extension of the SmartWay program. We repeat that offer here.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Claire Olson

Commenter Affiliation: Basin Electric Power Cooperative

Document Control Number: EPA-HQ-OAR-2008-0508-0637.1

Comment Excerpt Number: 18

Comment: The proposed EPA GHG rule does not require mandatory reporting for mobile source fleet operators. However, EPA "is requesting comments on the need for, and substance of, potential reporting requirements at this time." Basin Electric supports EPA's decision to not have fleet operators required to report to EPA outside of voluntary participation in existing programs. Fleet emissions do not account for a large percentage of electrical generating facilities' GHG emissions. This data may also be difficult and costly to collect. Therefore, the burden for entities to collect and report this data would be much greater than the potential value of the data. Additionally, some mobile sources may contain fuel over long periods of time resulting in inaccurate reporting. Basin Electric urges EPA to continue to exclude fleet operators from reporting under the mandatory reporting of GHG rule and all future rules.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Glen P. Kedzie
Commenter Affiliation: American Trucking Associations, Inc. (ATA)
Document Control Number: EPA-HQ-OAR-2008-0508-0715.1
Comment Excerpt Number: 7

Comment: Since the trucking industry has supported the development and expansion of the SmartWay program, and the agency's efforts to design and implement a new fuel economy test protocol by the end of 2009, the trucking industry supports the use of the FLEET model to quantify GHG emissions insofar as further modifications are made to the model to better reflect the rapidly changing environment in supply chain and goods movement. Given the wide-array of GHG reporting requirements already in place, the trucking industry seeks harmonization, simplicity, and burden reduction in whatever paths are considered for quantification of emissions. ATA is concerned over individual states creating a widely-divergent patchwork of GHG reporting requirements for trucking fleets. For example, the State of Washington is pursuing a rule requiring any owner or operator of a fleet of on-road motor vehicles that emit at least 2,500 metric tons of GHGs annually in the state to report the GHG emissions they emit. While the state may defer such reporting requirements associated with interstate trucks until there is a federal requirement to report such emissions or the state finds that there is a generally accepted reporting protocol for determining interstate emissions from these sources, no such federal requirements or reporting protocols currently exist for mobile sources such as trucks. ATA is hopeful that states will refrain from establishing separate GHG reporting requirements and defer to the federal government to further reduce GHG emissions from trucks whether through the establishment of national fuel economy/efficiency standards, lowering vehicle speed limits, allowing the use of more productive vehicles, or other means.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: None
Commenter Affiliation: NAFA Fleet Management Association
Document Control Number: EPA-HQ-OAR-2008-0508-0599.1
Comment Excerpt Number: 4

Comment: We believe that all fleets, whether public or private, should be encouraged to measure and manage GHG emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Kipp Coddington
Commenter Affiliation: Alston and Bird LLP
Document Control Number: EPA-HQ-OAR-2008-0508-0645.1
Comment Excerpt Number: 3

Comment: EPA states that "one of the most important functions of collecting fleet operator data is to inform operators about their emissions profiles and to shed light on opportunities to reduce emissions through the use of clean technologies, fuels, and operational strategies." 74 Fed. Reg. at 16,592. It is important for EPA to know that the commercial fleet leasing industry effectively already provides such services to its customers by, for example, the selection of "right-sized"

vehicles.⁶ We believe these matters are best addressed through market forces instead of regulatory fiat.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: None

Commenter Affiliation: NAFA Fleet Management Association

Document Control Number: EPA-HQ-OAR-2008-0508-0599.1

Comment Excerpt Number: 3

Comment: NAFA concurs with EPA's finding that a 25,000 metric ton of CO₂ threshold more effectively targets large emitters and is largely consistent with many of the existing GHG reporting programs, including California.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: None

Commenter Affiliation: NAFA Fleet Management Association

Document Control Number: EPA-HQ-OAR-2008-0508-0599.1

Comment Excerpt Number: 2

Comment: In lieu of mandatory reporting by fleets, we believe that all light-, medium- and heavy-duty fleets should strive to measure and manage GHG emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Kipp Coddington

Commenter Affiliation: Alston and Bird LLP

Document Control Number: EPA-HQ-OAR-2008-0508-0645.1

Comment Excerpt Number: 2

Comment: With respect to mobile sources as a category of sources that is proposed to be included in the mandatory GHG reporting rule, EPA states that (74 Fed. Reg. at 16,593): In light of the existing data available to EPA, the Agency is not proposing mandatory reporting requirements for mobile source fleet operators, but is requesting comments on the need for, and substance of, potential reporting requirements at this time. EPA defines "fleet operators" as "entities that have operational control over mobile sources." Id. at 16,592 n.129. "Operational control" means "having the full authority to introduce and implement operational, environmental, health and safety policies." Id. We interpret these definitions to mean that the "fleet operator" would be the commercial entity that operates the fleet, as opposed to (i) a fleet leasing company that provides the vehicles under lease (and may also provide ancillary services under contract to its commercial entity customer), and (ii) individual drivers (e.g., the employees of the commercial entity). We agree with EPA's decision not to propose mandatory reporting for fleet operators. For a variety of reasons, including facilitation of enforcement, GHG emissions from the transportation sector are better addressed through broad-based, upstream approaches as opposed to downstream schemes that impact individual vehicle owners and operators such as fleets. Moreover, the types of in-use data, including VMT, to which EPA already has access, are

extensive, as the Agency notes. Id. at 16,593.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: John H. Skinner

Commenter Affiliation: Solid Waste Association of North America (SWANA)

Document Control Number: EPA-HQ-OAR-2008-0508-0659.1

Comment Excerpt Number: 15

Comment: EPA's proposal to receive emissions data from vehicle and engine manufacturers and transportation fuel providers is the most effective way to receive accurate information regarding fleet emissions. Tracking CH₄ and nitrous oxide requires a facility to know the make and model year of each vehicle and that vehicle's engine in order to make the necessary calculations. Given the large fleets that many landfills maintain and continually turnover, the costs associated with tracking this data will be great and will most likely not aid EPA in writing additional climate change regulations.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Scott Davis

Commenter Affiliation: Arizona Public Service (APS)

Document Control Number: EPA-HQ-OAR-2008-0508-0639.1

Comment Excerpt Number: 4

Comment: EPA is requiring GHG reporting from "upstream production and downstream sources" and also manufacturers of new motor vehicles or new motor vehicle engines. EPA is addressing direct emitters as downstream sources, fuel and industry gas suppliers as upstream suppliers, and mobile sources as manufacturers of new vehicles or new motor vehicles. Company fleet emissions are not included in the threshold calculations for determining applicability of downstream sources nor are they included in the reporting requirements once an entity is subject to this rule. EPA states that "vehicle fleet emissions are covered by reporting from fuel suppliers as part of the oil and gas production," and therefore is already accounted for. APS agrees with this statement and supports EPA's position to exclude vehicle fleet emissions in applicability calculations and reporting requirements.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Kipp Coddington

Commenter Affiliation: Alston and Bird LLP

Document Control Number: EPA-HQ-OAR-2008-0508-0645.1

Comment Excerpt Number: 9

Comment: Should one or more minimum emissions thresholds apply based on the mobile source category, and what would be appropriate annual thresholds? We do not believe that private fleet operators should be included in the rule. If private fleet operators are to be included, we do not believe that any threshold should be applied. A threshold would create incentives for fleet operators to reorganize below the ceiling.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Amadeo Saenz

Commenter Affiliation: Texas Department of Transportation (TxDOT)

Document Control Number: EPA-HQ-OAR-2008-0508-0441.1

Comment Excerpt Number: 4

Comment: EPA requested comment on whether there are certain categories of fleets that should be included or excluded from potential reporting requirements (e.g., public fleets versus private fleets) TxDOT would again suggest a tiered approach, starting with the largest of private fleets, if that information is determined to be necessary.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Linda L. Koop

Commenter Affiliation: Texas Clean Air Cities Coalition (TCACC)

Document Control Number: EPA-HQ-OAR-2008-0508-1037.1

Comment Excerpt Number: 2

Comment: The members of the TCACC purchase and maintain on road and off road fleets. As our member cities range in size from 37 residents to over 4 million residents, the complexity of fleet management varies greatly. If EPA proposes mandatory reporting of greenhouse gases from fleet operators, including local governments, the EPA should set a threshold for reporting that would not cause financial burdens on our smallest members who have the smallest greenhouse gas impact. Therefore, the TCACC would suggest setting a threshold for reporting for local governments serving a population of greater than 50,000. Local governments of this size are more likely to have larger fleets with computerized fleet management systems that would greatly ease the ability to report under a mandatory reporting rule.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Amadeo Saenz

Commenter Affiliation: Texas Department of Transportation (TxDOT)

Document Control Number: EPA-HQ-OAR-2008-0508-0441.1

Comment Excerpt Number: 2

Comment: EPA requested comment on whether fleet operators should be required to report to EPA outside of voluntary participation in the SmartWay or Climate Leaders programs. How would this data be used to inform future climate policy? TxDOT would be interested in EPA's analysis of the benefits of data already received through voluntary programs. If this data is of value and provides additional information for developing policy above and beyond what would be collected at the state or MPO level, TxDOT would appreciate being able to review and comment on such rationale.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: B. Lee Kindberg
Commenter Affiliation: Maersk, Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0427.1
Comment Excerpt Number: 3

Comment: Complexity and regulatory burden are also a concern for truck fleet operators. The vast majority of trucking companies are small, and many are managed by owner-operators with a small number of trucks. State and federal fuel and road use tax requirements already present a significant and complex reporting burden, and the resulting databases already include extensive information on fuel use. Capturing additional specific fuel use data at the federal level from these companies would provide little to no additional relevant data from which EPA could draw pertinent conclusions. Data complexity and duplication would also be a greater concern. EPA can obtain accurate miles driven data (and apply fuel consumption averages) from the existing state and federal databases and from DOT through interagency means. Thus the proposed approach is the most practical and least burdensome for both the industry and the Agency.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Bruce R. Byrd
Commenter Affiliation: AT & T Services, Inc.
Document Control Number: EPA-HQ-OAR-2008-0508-0426.1
Comment Excerpt Number: 3

Comment: AT&T respectfully argues it should not, particularly given the comprehensive reporting requirements and fuel efficiency regulation that EPA is proposing for vehicle and engine manufacturers, as well as pre-existing voluntary programs for mobile fleet emissions reporting. Notably, even EPA does not suggest how further data from mobile fleets could be potentially relevant. Instead it simply asks: "How would this data be used to inform future climate policy?" 74 Fed. Reg. 16593. [footnote: The proposed rule pursues a very broad view of EPA's authority to impose reporting requirements, emphasizing that information may be required under Section 114 for purposes of "carrying out any provision" of the Act. 74 Fed. Reg. at 16454. But, at a bare minimum, EPA must have some purpose for imposing costly reporting requirements on companies. Indeed, as demonstrated below, this information would be both costly and irrelevant. Requiring fleet operators to provide such information would be both unnecessary and beyond EPA's valid authority] AT&T believes that given the other available information on vehicle GHG emissions, additional monitoring would not result in or lead to more focused or actionable policy to justify the significant burdens it would impose and, as a result, EPA should not mandate reporting information unique to fleet operators. First, the most relevant data is already provided by engine manufacturers for all vehicles: the emissions per mile driven of each mobile source on the road. Requiring this information of mobile fleet operators would be both redundant and provide no additional relevant information. This is because fuel efficiency is driven by regulation of vehicle manufacturers. Fleet operators can only purchase commercially available vehicles. EPA already has sales data on the mix of vehicles purchased and retired. Mobile fleets are not even a particularly useful subset of that sales data, because they are largely fungible with private vehicles. Thus, imposing onerous requirements could simply push companies to rely more on private vehicles and less on vehicle fleets. Mobile fleets are very different from one another, and serve very different purposes, therefore gathering data for benchmarking or for making comparisons between fleets would need to be extraordinarily

detailed and complex with little likelihood of being particularly useful. Some fleets, such as AT&T's, are used for short trips, with long periods of inactivity. AT&T's mobile fleet is principally used to get employees and equipment to a job site, where they remain for a long period of time. In contrast other fleets often travel long distances, or haul significant weight, or are in constant use, or require significant idle time. Given these extremely diverse fleets, the data they generated would be essentially useless for purposes of comparison. And a uniform reporting requirement could not be tailored to the differences in fleet activity. Importantly, increasing energy efficiency and reducing energy consumption is an important factor to a company's economic success, and will be increasingly critical in the future. Thus, companies already have the strongest possible incentives to monitor and improve energy efficiency in their fleets and there are diverse means of achieving these goals. In any particular fleet the following characteristics of the fleet could be monitored for potential efficiency improvements: fuel mix (alternative versus conventional), miles driven, idle time, vehicle technology mix (conventional versus hybrid), driving habits, and efficiency-minded vehicle maintenance. No particular uniform approach can be prescribed by regulation due to the complex differences between individual fleets. At the same time, innovative ICT services are being introduced to help fleet operators select the most effective mix of strategies. For its part, AT&T has integrated GPS with its dispatch system to monitor and minimize the distance traveled and idling time by its fleet, and hence the fleet's emissions. AT&T likewise offers a complete line of fleet monitoring solutions to the business sector. AT&T has also employed pilot programs to assess the feasibility of reducing energy use and GHG emissions through the use of compressed natural gas ("CNG") vehicles, and this program has led AT&T to commit to a major switch to CNG vehicles in its mobile fleet. For the reasons discussed earlier, reporting by fleet operators will not be informative. Imposing a uniform reporting requirement would only shift fleet operator resources from monitoring and improving fleet operation in the most appropriate fashion for its particular fleet to collecting and reporting data that is not actionable. If EPA elected to impose fleet reporting requirements despite the points AT&T sets forth above, AT&T respectfully requests that it consider exempting reporting by fleet operators such as AT&T that employ comprehensive fleet management systems that track the driving patterns of their fleets. Such systems can help realize dramatic drops in emissions, which would be forfeited if companies abandoned them because of EPA-imposed reporting requirements that required companies to focus on other metrics of emissions such as fuels purchased. For example, the Telenav system offered by AT&T allows fleet operators to track the location, mileage, speed, and idle time of their fleets. It even allows an operator to track when a vehicle's doors are open. Such a system alerts operators to areas for efficiency improvements by identifying inefficient driving habits, and routes. It may induce even more dramatic effects by encouraging drivers to avoid jackrabbit starts, high speeds, and long idle times that are transparent to managers using Telenav, but too often go unnoticed and uncorrected because fleet operators, and not drivers, typically pay fuel costs. EPA should encourage the continued development of such technology by exempting fleets that employ it.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Kipp Coddington

Commenter Affiliation: Alston and Bird LLP

Document Control Number: EPA-HQ-OAR-2008-0508-0645.1

Comment Excerpt Number: 8

Comment: Are there certain categories of fleets that should be included or excluded from

potential reporting requirements (e.g., public fleets versus private fleets)? We do not believe that private fleet operators should be included in the rule. If private fleets are to be included, we encourage EPA to ensure that "fleet operators" be redefined to include any vehicle (including both those under lease to the company that operates the fleet and general public vehicles that employees use for business purposes). We believe that it is worthwhile for governments to lead by example, so do not oppose the inclusion of State and local government fleets in the rule. If EPA elects to do so, we encourage the Agency to ensure that private fleets are not inadvertently swept up into the reporting scheme. EPA could do so by defining covered fleets to be limited to government owned/operated fleets and private fleets that are under contract to, or operating under an exclusive license or franchise with, State or local government entities. That is the bright line test that resulted from settlement of the EMA v SCAQMD litigation on remand.[Footnote: Engine Manufacturers Association v. South Coast Air Quality Management District, 541 U.S. 246 (2004).] Under no circumstance should commercial fleet leasing companies – i.e., the companies who own vehicles and lease them to fleet operators – be deemed the "fleet" that is subject to reporting. This is because commercial fleet leasing companies have no practical operational control over the vehicles that they lease to their customers.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: David A. Buff

Commenter Affiliation: Florida Sugar Industry (FSI)

Document Control Number: EPA-HQ-OAR-2008-0508-0500.1

Comment Excerpt Number: 12

Comment: Given the large recordkeeping and reporting effort needed to address GHG emissions from mobile fleet operators, relying on gasoline/diesel fuel suppliers sales data appears to be a much more cost effective means of tracking GHG s from this sector of the economy. If facility-specific information is required, it should be limited to fuel use by mobile source category: i.e., commercial light-duty vehicles, heavy-duty trucks, rail equipment, aircraft, waterborne vehicles. Facilities themselves should not be required to estimate GHG emissions from these sources.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Dana Blume

Commenter Affiliation: Port of Houston Authority (PHA)

Document Control Number: EPA-HQ-OAR-2008-0508-0607.1

Comment Excerpt Number: 6

Comment: The EPA requested comments relating to mobile source fleet operator data. The PHA believes that fleet operators should continue to report under voluntary programs instead of through this GHG reporting rule. The PHA maintains both an on road and off road fleet of vehicles and has conducted numerous emission inventories. These inventories were conducted primarily for the development of State Implementation Plans as well as the development and implementation of a PHA Clean Air Strategy Plan, which includes clean fleet and fuels programs. Emission inventories for mobile sources can be costly and time consuming, depending on the availability of data and reliability of the data received. Technical difficulties in reporting fleet data may include lack of protocols, lack of consistency in reporting and lack of available data to the fleet owner. This is especially true for older fleets or where fleet data collection is not

automated. In most cases, this type of data can be collected by a fleet owner if the fleet owner has significant lead time to set up data reporting systems and to gather the required data. If the EPA requires reporting by fleet operators, it should set reporting thresholds so as not to cause undue burdens on small fleet owners with limited capabilities to collect and report data. Additionally, the PHA believes that estimating the GHGs from fuel consumption data alone is not sufficient for appropriate emission reporting and fleet management. Data including engine types, operational hours, and vehicle miles traveled is necessary to develop a reliable GHG emission inventory.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Kipp Coddington

Commenter Affiliation: Alston and Bird LLP

Document Control Number: EPA-HQ-OAR-2008-0508-0645.1

Comment Excerpt Number: 5

Comment: If EPA were to elect to include fleet operators, we would suggest that "fleet operators" be redefined to include any vehicle (including both those under lease to the company that operates the fleet and general population vehicles that employees use for business purposes), thereby ensuring the collection of accurate data in a manner that does not depend upon (i) the manner in which a vehicle is financed (commercial lease versus personal purchase), or (ii) the structure of the fleet itself – managed fleet versus driver reimbursement program.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Stuart A. Clark

Commenter Affiliation: Washington State Department of Ecology (Ecology)

Document Control Number: EPA-HQ-OAR-2008-0508-0646.1

Comment Excerpt Number: 5

Comment: Reporting of GHG emissions for fleets: EPA has specifically asked for comments regarding including a reporting requirement for fleets. Ecology supports such a reporting requirement, which is part of Washington's GHG reporting requirements. According to the 2009 U.S. Greenhouse Gas Inventory Report, one third (1,924.6 Tg) of the nation's 2007 CO₂ emissions come from the domestic transportation sector, with CH₄ contributing an additional 2.3 Tg and N₂O 30.1 Tg. Reporting of travel activity and other in-use, emissions-related data complements upstream fuel and engine manufacturer reporting by tying the fuel use to real-world conditions, sectors, and activity levels. Increased awareness of greenhouse gas emissions by fleet managers can lead to voluntary emission reductions and cost savings in the form of reduced fuel use. The state of Washington requires owners or operators of fleets of on-road motor vehicles that emit at least 2,500 MT CO₂e and fleets of aircraft, marine vessels, rail equipment, or other land based mobile sources that emit at least 10,000 MT CO₂e to report their greenhouse gas emissions, including all six of the common greenhouse gases (CO₂, CH₄, N₂O, SF₆, HFCs, and PFCs). Ecology based Washington's fleet reporting system on the methods in The Climate Registry's (TCR) General Reporting Protocol, Version 1.1, May 2008 - Chapter 13 Direct Emissions from Mobile Combustion and Chapter 16 Direct Fugitive Emissions from the Use of Refrigeration and Air Conditioning Equipment. Washington's reporting program is still in the process of being implemented, but Ecology has conducted extensive stakeholder meetings and public outreach on the topic of fleet reporting. One of the key concerns of our stakeholders

regarding on-road motor vehicle reporting was the requirement in TCR's calculation methods to report CO₂ by fuel use and CH₄ and N₂O by mileage. Combined with the inclusion of vehicle model or control technology specific emissions factors for CH₄ and N₂O, this significantly increases the amount of activity data that needs to be tracked and reported. Almost all of our stakeholders currently track fuel use by fuel type for their on-road motor vehicle fleet, but many stakeholders do not track mileage or are unable to associate activity data with specific vehicles or vehicle models. Ecology worked with the stakeholders to develop a simplified estimation method for CH₄ and N₂O based on fuel use to minimize the reporting burden associated with their small percentage of total emissions. Different methods for determining where emissions from mobile sources occur are needed for each type of mobile source to account for operational differences. The complexity of associating emissions with a specific area should be less difficult in a federal reporting program since interstate distinctions would not necessarily need to be made. Ecology also recommends having each owner or operator report mobile sources on an organizational level instead of by facility.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: None

Commenter Affiliation: NAFA Fleet Management Association

Document Control Number: EPA-HQ-OAR-2008-0508-0599.1

Comment Excerpt Number: 5

Comment: The NAFA-EDF fleet greenhouse gas calculator estimates total fleet greenhouse gas emissions from fuel consumption data. This data is directly used to calculate emissions of carbon dioxide (CO₂), which accounts for about 95% of greenhouse gas from vehicles. Emissions of nitrous oxide (N₂O), methane (CH₄) and hydrofluorocarbons (HFCs) are estimated based on their prominence among greenhouse gas from transportation sources as reported in the Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006. Total emissions of carbon dioxide are calculated by multiplying volume of fuel consumed by the appropriate fuel-specific carbon dioxide coefficient. The CO₂ coefficients are drawn mainly from the U.S. EPA Climate Leaders guidance for mobile combustion sources. The CO₂ factors for electricity are from the U.S. Energy Information Agency. Emissions from ethanol and biodiesel are based on direct tailpipe emissions as reported from the Argonne National Laboratory GREET model. Calculating emissions of CH₄ and N₂O is more complicated than calculating CO₂ emissions. Emissions of CH₄ and N₂O depend on drive cycle, miles traveled and pollution control technology. To more accurately calculate these emissions, the U.S. EPA provides coefficients for CH₄ and N₂O emissions. Fleets need unit-specific mileage data along with either pollution control technology (preferred method) or model year to utilize these coefficients. While some fleets may have this data readily available, they appear to be the exception, not the rule. Fleets should aim to capture this information in order to undertake more accurate emissions calculations in the future. In the meantime, we are presenting a method for estimating these emissions. The NAFA-EDF calculator estimates emissions of N₂O and CH₄ based on their relative prominence among vehicle mixes as reported in Table 2-15 Transportation-Related Greenhouse Gas Emissions) of the EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006. In this table, the EPA provides data on five categories of highway vehicles: Passenger cars; light-duty trucks, vans and SUVs; medium and heavy duty vehicles (8500lbs+); buses; and motorcycles. Using this breakdown, calculator users can choose between three fleet profiles for the one that best fits their fleet and data systems. 1. Profile one is for fleets that are able to separate their fuel consumption data at the vehicle type level. For this profile, fleet managers will be asked to add in the fuel

consumption by three vehicle classes: passenger cars; light duty trucks, vans, and SUVs; and medium and heavy duty vehicles (over 8,500 lbs). We do not ask about motorcycles because they are not a significant component of fleets. We exclude a specific section on buses because we could not identify vehicle weight criteria for the category. 2. Profile two is for light-duty fleets that don't distinguish fuel consumption data by vehicle type. For this profile, fleet managers will be able to estimate their emissions by entering in the combined fuel consumption of all their vehicles in these two classes. 3. Profile three is for fleet managers that have a diverse fleet of light-duty and medium to heavy duty vehicles and are unable to track fuel consumption by vehicle type. They will enter the total fuel consumption. HFCs are chemicals that are used as alternatives to ozone-depleting substances. HFC-134a ($\text{CF}_3\text{CH}_2\text{F}$) is utilized in most vehicle air conditioning systems. Each unit of HFC-134a emitted has the same global warming impact as 1,300 units of CO_2 . To fully account for emissions of HFC-134a, fleets need to track data on the capacity of each vehicle's air conditioning system, its rate of leakage, any system recharges, and charge at time of disposal. Many fleets lack this data. Thus, our tool estimates these emissions using the same method as for N_2O and CH_4 emissions. For HFCs, the coefficients used in the three fleet HFCs are chemicals that are used as alternatives to ozone-depleting substances. HFC-134a ($\text{CF}_3\text{CH}_2\text{F}$) is utilized in most vehicle air conditioning systems. Each unit of HFC-134a emitted has the same global warming impact as 1,300 units of CO_2 . As fleets develop more robust greenhouse gas tracking systems, they can utilize the more sophisticated calculation techniques outlined by the U.S. EPA Climate Leader program guidance for Direct HFC and PFC Emissions from Use of Refrigeration and Air Conditioning Equipment. The Minnesota Pollution Control Agency is also collecting model specific information about vehicle air conditioners, including A/C charge size and yearly leakage rate. The NAFA-EDF calculator also calculates greenhouse gas emissions from non-highway equipment. CO_2 , N_2O and CH_4 are the relevant emissions. HFCs are not a significant source of emissions from this equipment. As with on-road vehicles, our calculator calculates CO_2 emissions based on fuel consumption. Emissions of N_2O and CH_4 are also calculated directly from fuel consumption for off-road equipment. Our source of the N_2O and CH_4 coefficients is the U.S. EPA Climate Leaders Simplified GHG Emissions Calculator.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Kipp Coddington

Commenter Affiliation: Alston and Bird LLP

Document Control Number: EPA-HQ-OAR-2008-0508-0645.1

Comment Excerpt Number: 6

Comment: EPA is in good company in electing not to include fleet operators in the rule, as we are not aware of any comparable federal, State or regional climate change program that has elected to include fleets (e.g., CARB, WCI, RGGI, etc.).

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Glen P. Kedzie

Commenter Affiliation: American Trucking Associations, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0715.1

Comment Excerpt Number: 6

Comment: EPA asks: "What type of data verification or quality control should EPA require in any potential reporting requirements?" The trucking industry does not support a requirement for third-party verification of mandatory GHG emissions reporting for several reasons. There is no precedent for third-party verification in any federal environmental statute. The trucking sector is subject to numerous reporting requirements under federal statutory programs including The Resource Conservation and Recovery Act, Clean Air Act, Emergency Planning and Community Right-to-Know Act, Spill Containment and Countermeasures Program, the Clean Water Act and Superfund to name a few. None of these programs require third-party verification of reporting, and many don't even require self-certification. All, however, include enforcement provisions, which create significant disincentives for faulty or false reporting. Any GHG reduction regime promulgated at the federal or state level will incorporate similar enforcement mechanisms designed to promote good behavior and penalize violators. Any requirement for third-party verification in a federal mandatory reporting program will add significant and unnecessary costs to the regulation, especially if such verification were to be required in the trucking sector where 96 percent of the companies are small businesses and profit margins are already a slim 2-4 percent. The trucking industry respectfully urges the EPA not to include a requirement for third-party verification in the GHG reporting rule, but instead rely upon the ample enforcement authorities available to the Agency and/or consider the use of self-certification with random EPA audits for data verification.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Glen P. Kedzie

Commenter Affiliation: American Trucking Associations, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0715.1

Comment Excerpt Number: 5

Comment: Any metrics for mobile sources under consideration by either the U.S. Department of Transportation or EPA need to be harmonized and account for the diverse nature of the trucking industry, the wide variations in work applications and load types, classes of vehicle, etc. A one-size-fits-all metric is not only ill-advised, but non-attainable. There are at least two substantive metrics for quantifying the miles per gallon what trucks haul, those being volume and weight with the far more important of the two being volume. It would seem that metrics for both cubic foot and (lesser so) ton-mile would be needed. It should be noted that the average single combination vehicle (of the hundreds of millions weighed in 2008) traversing weigh-in-motion scales totaled a mere 54,000 pounds, far shy of the maximum 80,000 gross vehicle weight limit. The overwhelming conclusion that can be drawn is that trucks haul far more cubic feet than tons. Hence, using a single ton-mile metric for all truck operations would be misleading and simply bad public policy.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Glen P. Kedzie

Commenter Affiliation: American Trucking Associations, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0715.1

Comment Excerpt Number: 4

Comment: EPA asks: "Are there certain categories of fleets that should be included or excluded

from potential reporting requirements (e.g., public fleets versus private fleets)?" ATA recommends that medium- and heavy-duty trucking fleets be excluded from further GHG reporting requirements under the Proposed Rule.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Glen P. Kedzie

Commenter Affiliation: American Trucking Associations, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0715.1

Comment Excerpt Number: 2

Comment: ATA recommends that medium- and heavy-duty trucking fleets be excluded from further GHG reporting requirements under the Proposed Rule.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Glen P. Kedzie

Commenter Affiliation: American Trucking Associations, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0715.1

Comment Excerpt Number: 3

Comment: Establishing any emission thresholds for the trucking industry will inhibit the ability of the nation's trucking fleets to keep up with business and consumer demands for products, will impede the movement of freight, and will stifle the very core of the nation's economy. The trucking industry supports improved fuel economy and efficiency for trucks and will continue to work with legislators and regulators to push manufacturers to advance new technologies and engine/tractor/trailer designs that are both economically and technologically feasible.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: None

Commenter Affiliation: NAFA Fleet Management Association

Document Control Number: EPA-HQ-OAR-2008-0508-0599.1

Comment Excerpt Number: 6

Comment: With respect to any potential reporting requirement for fleets, we agree with EPA's recommendation set out in the proposal for self certification with EPA verification. Under this proposed approach, all reporters subject to this rule would certify that the information they submit to EPA is truthful, accurate and complete. EPA would then review the emissions data and supporting data submitted by reporters to verify that the GHG emission reports are complete, accurate, and meet the reporting requirements of this rule.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Michael J. Rush and Louis P. Warchot

Commenter Affiliation: Association of American Railroads (AAR)

Document Control Number: EPA-HQ-OAR-2008-0508-0655.1

Comment Excerpt Number: 3

Comment: EPA asks if more information should be reported by railroads. The answer is clearly no. EPA has more definitive data from the railroad industry than from most other industries. As EPA notes in its discussion of railroad data, Class I railroads are required to report their fuel consumption to the Surface Transportation Board. Since virtually all of the railroad industry's emissions are attributable to its diesel fuel consumption, EPA actually has a very good estimate of the railroad industry's greenhouse gas emissions.[Footnote: While only Class I railroads report fuel consumption to the STB, AAR estimates that Class I railroads account for 95.5 percent of the railroad industry's fuel consumption, based on surveys of non-Class I railroads and other information. Thus, there is no reason to require additional reporting by non-Class I railroads.] Of course, the data show that the railroad industry plays a positive role with respect to greenhouse gas emissions. On average, the railroad industry moves one ton of freight 457 miles on one gallon of fuel, a 35 percent improvement since 1990. Furthermore, the railroads are more energy efficient than alternative forms of transportation. For example, railroads are three times more efficient than trucks when transporting trailers and containers. Railroads also help reduce highway congestion since a single train can take 280 trucks off the highways.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Alan Lloyd

Commenter Affiliation: International Council on Clean Transportation (ICCT)

Document Control Number: EPA-HQ-OAR-2008-0508-0697.1

Comment Excerpt Number: 6

Comment: Regarding possible reporting requirements for fleet operators, certified and commuter air carriers currently provide monthly fuel usage data to the Bureau of Transportation Statistics that can be used to calculate CO₂ emissions. Such data is of limited usefulness in estimating aviation NO_x and PM inventories absent a method to disaggregate fuel use across different travel segments. Given that aircraft and engine manufacturers are presumably privy to considerable activity data for their products under maintenance and service agreements, EPA could consider requiring aviation manufacturers to provide aggregate activity statistics (for example, annual block hours per travel segment) on a model and/or engine basis as an input to NO_x and PM inventories. This data could also help ICAO construct CO₂ inventories for countries that lack US-style reporting requirements for commercial air carriers.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Phillip McNeely

Commenter Affiliation: City of Phoenix, AZ

Document Control Number: EPA-HQ-OAR-2008-0508-0374.1

Comment Excerpt Number: 15

Comment: Support the exclusion of vehicle travel activity from state and local government fleets. The proposal to require vehicle and fuel manufacturers to report emissions is the most effective and efficient approach to data collection for mobile sources. The expansion of current vehicle emissions reporting to include GHG emissions provides a simple and effective solution

to data collection. As noted in the preamble, EPA currently collects a variety of travel activity data from several existing programs. For example, EPA has access to extensive fuel use and vehicle travel data from state agencies through air quality and transportation planning regulations. That approach is reasonable for the GHG emissions as well. Adding a new requirement for government fleets to report data on in-use travel activity provides questionable benefit and adds unnecessary regulatory burden. EPA indicates that the data collected through GHG reporting will be used to inform future climate policy and regulation. The regulation of vehicle emissions has been successfully achieved through federal standards for vehicles and fuels. Restriction or regulation of government vehicles that are providing essential public safety services with limited resources does not appear to be an appropriate regulatory approach. In addition, government fleets represent a very small fraction of the total vehicle use in the nation.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: B. Lee Kindberg

Commenter Affiliation: Maersk, Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0427.1

Comment Excerpt Number: 1

Comment: The proposed rule captures data on mobile sources at the point of fuel dispensing, where systems and measurements already exist. We support this approach for the following reasons: This approach builds on extensive existing systems for measurement and reporting, which EPA already uses in the national inventories. Continuing this practice allows and supports continued trend analysis. The point of sale is the most accurate and efficient point for data capture, since measurement and reporting technologies at the point of sale are mature and well established. Fuel tax programs and regulatory systems are already in place at this point in the fuel supply and use chain. The point of sale/dispensing is particularly appropriate for mobile sources since it eliminates the potential confusion and fragmented reporting that would result if reporting were required for individual fleets or sources which by their very nature travel internationally and interstate. The location is clearly and simply defined. No extensive new measurement or reporting systems need be developed by fuel users, many of whom currently do not have systems or personnel dedicated to such reporting. This approach achieves the national goals while minimizing the burden and cost for the regulated community, reducing sources of variability in data quality, and allowing more rapid implementation of national data collection programs. Controlling the number of potential reporting entities also reduces the impact on the Agency in data and compliance management and in the level of assistance which would be needed by large numbers of new reporters. If or when a verification system is required, this focused approach greatly reduces the required number of verifiers. The availability of knowledgeable and trained verifiers and the cost of and time required for verification have already become concerns in some voluntary programs. (Maersk has been a member of the California Climate Action Registry and Maersk personnel served on The Climate Registry's advisory committee during protocol development.) Relying on existing data collection systems also enables rapid implementation and reduces possible duplication. Several such systems do exist, both in the Agency's programs and extensive specific fuel and use data available in other state and federal agencies including the Department of Transportation (DOT) and the Department of Energy. In addition, data to verify use assumptions and analyses are also accessible through voluntary systems such as SmartWay, Climate Leaders, the California Climate Action Registry and The Climate Registry. The proposed approach builds on existing successful programs rather than seeking to create new programs in entities where such expertise

is not currently in place. Thus, on the whole, EPA's proposed approach would provide the highest data quality with the least additional burden and cost for industry and the regulatory agencies.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Amadeo Saenz

Commenter Affiliation: Texas Department of Transportation (TxDOT)

Document Control Number: EPA-HQ-OAR-2008-0508-0441.1

Comment Excerpt Number: 3

Comment: EPA asked whether there Are there certain categories of mobile sources that should be included or excluded in potential reporting requirements (e.g., lawn mowers, commercial light-duty vehicles, heavy-duty trucks, rail equipment, aircraft, waterborne vehicles). If looking at what the U.S. has learned from emission inventories for NAAQS attainment, the better the inventory data the better the resulting modeling. With that said, some inventory data is based on emissions analysis from a sampling of emission sources. We would suggest these sources first have a sampling of emissions analysis, and then make an assessment of whether data needs to be collected from individual fleet owners.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Glenn Hamer

Commenter Affiliation: Arizona Chamber of Commerce and Industry

Document Control Number: EPA-HQ-OAR-2008-0508-0564.1

Comment Excerpt Number: 9

Comment: Given the wide-array of GHG reporting requirements already in place, the Arizona Chamber seeks harmonization, simplicity, and burden reduction in whatever path is chosen for quantification of emissions. Since members of the trucking industry have supported the development and expansion of the SmartWaySM program, and the agency's efforts to design and implement a new fuel economy test protocol by the end of 2009, the Arizona Chamber supports the use of the FLEET model insofar as further modifications are made to the model to better reflect the rapidly changing environment in supply chain and goods movement.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Dana Blume

Commenter Affiliation: Port of Houston Authority (PHA)

Document Control Number: EPA-HQ-OAR-2008-0508-0607.1

Comment Excerpt Number: 15

Comment: EPA asks: "Should one or more minimum emissions thresholds apply based on the mobile source category, and what would be appropriate annual thresholds?" Thresholds are favored by the PHA as a reasonable and rational methodology. However, a distinction should be made between thresholds based on single engine outputs from thresholds based on fleet outputs. While thresholds based on fleet size are logical from strictly an emission reduction viewpoint,

care would need to be taken to avoid and/or offset unintended consequences and potential economic effects. Thresholds for fleet size may create efforts to avoid the emissions threshold and resulting costs. Fleet owners may be encouraged to minimize fleet sizes, thereby expending time and resources on legal and property transactions and distracting from the goal of reducing mobile source emissions. The PHA favors single engine thresholds to avoid a market driven cause and effect from fleet thresholds, unless EPA considers and adjusts regulations to factor in economic effects for mobile source fleet owners.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Roy Prescott and John Duffy

Commenter Affiliation: Local Government Advisory Committee (LGAC) and Climate Change

Document Control Number: EPA-HQ-OAR-2008-0508-2079

Comment Excerpt Number: 2

Comment: Mobile Sources With the current state of the economy the differing levels of available fleet data, and lack of standard protocols, LGAC believes that EPA should continue to have fleet operators report through voluntary programs as mentioned in the proposed rule. LGAC would be willing to support a mandatory reporting rule for mobile sources with an advanced notice of at least 18 months following the promulgated of the reporting requirements.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Roy Prescott and John Duffy

Commenter Affiliation: Local Government Advisory Committee (LGAC) and Climate Change

Document Control Number: EPA-HQ-OAR-2008-0508-2079

Comment Excerpt Number: 5

Comment: Mobile Source Fleets- Threshold for Reporting- If EPA proposes mandatory reporting of GHGs of fleet operators, the LGAC believes there should not be a distinction between public and private fleets as they all contribute to emissions of GHG and associated climate change. However, in order to not cause undue burdens on small and disadvantaged communities which have and operate small fleets with minimal impacts to the environment should be exempt. Therefore, the LGAC would support a reporting threshold for fleets operated by a local government serving a population of over 100,000.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Bruce J. Parker

Commenter Affiliation: National Solid Wastes Management Association

Document Control Number: EPA-HQ-OAR-2008-0508-2126

Comment Excerpt Number: 9

Comment: EPA requested comments on whether or not the agency should collect vehicle emission and activity data from industries or state and local governments with vehicle fleets. The solid waste industry is a mixture of both public sector and private sector operations with a

combined fleet of approximately 130,000 heavy duty trucks. These vehicles are used to collect garbage, recyclables, and compost. A typical route involves each truck driving from a central fleet center to its individual route. On-route, trucks are stopping at each residential or business customer. While they are stopped to collect the customer's solid waste or recyclables, these trucks do not turn off their engines because the engine is used to power the on-board lifting and compaction units, commonly referred to as power take-off units. In addition, if the engine could be turned off at each stop, starting and stopping it constantly would consume and waste more fuel than would be saved. When full, these trucks drive to a consolidation or disposal point where they are emptied. At the end of the day, they return to the fleet yard. The waste industry fleet, both public and private, is unique among trucking fleets because it starts empty, is filled up in many locations, and then is emptied. The stop and idle with power takeoff nature of our collection activities means that companies do not normally track fuel consumption in terms of miles per gallon. Rather, the only fuel usage that is estimated is the allowance for the fuel used by the power take-off units because that portion of fuel use is not subject to over the road fuel taxes. Estimating overall per gallon consumption has little meaning for a vehicle that is called upon to do its most productive work while standing still. EPA's proposal to receive this information from vehicle and engine manufacturers and transportation fuel providers will be, by far, the most efficient way to provide EPA with the best information. We also note that tracking CH₄ and N₂O will require a facility to know the make and model year of each vehicle and that vehicle's engine in order to make the necessary calculations. As noted above, the industry fleet is at least 130,000 trucks. Company fleets tend to be composed of a variety of trucks with replacement of older vehicles ongoing. The cost of calculating these emissions will be great yet individual fleet data will not aid EPA in writing additional climate change regulations. Collecting vehicle fleet emission data will provide duplicative data while burdening reporting entities with wasted time and effort -time and effort that would be better spent reporting that facilities actual emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Roy Prescott and John Duffy

Commenter Affiliation: Local Government Advisory Committee (LGAC) and Climate Change

Document Control Number: EPA-HQ-OAR-2008-0508-2079

Comment Excerpt Number: 10

Comment: Mobile Source Fleet Operator Data (16593) — Most local governments purchase and maintain mobile sources of both on and off road fleets for a variety of purposes including, but not limited to police cruisers and helicopters, fire trucks, refuse trucks, lawn mowers, weed eaters, tractors, and code compliance inspection vehicles. Depending on the size and focus on the local government, collection and dissemination of fleet management data ranges from highly sophisticated or non-existent. While some local governments have conducted emission inventories for their fleets, these have either been for the purposes of State implementation Plan (SIP) planning, federal or state grants, or at a very high level and may be incomplete. For example, the GHG inventories conducted by many local governments using the ICLEI software tool generally do not include off road mobile sources.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Roy Prescott and John Duffy

Commenter Affiliation: Local Government Advisory Committee (LGAC) and Climate Change

Document Control Number: EPA-HQ-OAR-2008-0508-2079

Comment Excerpt Number: 11

Comment: The reporting requirements should not be for fuel consumption alone as this doesn't provide enough information to adequately represent the GHG emissions from the fleet. The data collected should also include information such as mileage or hours of operation, and relevant engine information. The LGAC believes that self verification is adequate and consistent with other EPA rule makings. The LGAC would defer to EPA staff on the appropriate emission methodology for reporting on road and off road fleets.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

3. STATE AND LOCAL TRAVEL ACTIVITY

Commenter Name: Matthew Frank

Commenter Affiliation: Wisconsin Department of Natural Resources

Document Control Number: EPA-HQ-OAR-2008-0508-1062.1

Comment Excerpt Number: 40

Comment: EPA asks: Should EPA require States, local governments, or other entities to report additional travel activity or emissions-related data beyond what is required under EPA's existing reporting requirements? How would such data be used to inform future climate policy? The data required under EPA's existing reporting requirements, combined with the data required under this proposed rule, provide sufficient information for estimating GHG emissions. Requiring additional data would impose additional workload burdens on states while providing little, if any, improvement to the emission estimates.

Response: EPA is not including any requirements for state and local governments to report travel activity or other emissions-related data in this final rule. As discussed in the proposed rule, we believe there is sufficient travel activity and other emissions-related data already collected under EPA's Air Emissions Reporting Rule (40 CFR part 51, subpart A) and through other federal agency programs.

The public comments in this volume will inform EPA's existing programs and any future policies related to understanding the overall GHG contribution of the mobile source sector.

Commenter Name: Carrie Noteboom

Commenter Affiliation: New York City Law Department

Document Control Number: EPA-HQ-OAR-2008-0508-0641.1

Comment Excerpt Number: 3

Comment: In response to the question, "What nonroad activity data is of most interest for understanding GHG emissions, and should EPA consider any additional requirements for reporting such data beyond what is currently required?" the City believes that additional

information on greenhouse gas emissions from non-road vehicles and construction equipment would be useful. These emissions are not currently included in the City's greenhouse gas emissions inventory due to lack of data. Additional data would be helpful in developing strategies to effectively manage these sources' greenhouse gas contribution. The City has begun to address emissions from non-road vehicles with the enactment of Local Law 77, which requires that all diesel engines of greater than 50 horsepower used on City construction projects operate on ultra-low sulfur diesel fuel with sulfur content no greater than 15 ppm, and requires that these same diesel engines incorporate the Best Available Technology (BAT) to reduce emissions of pollutants. See R.C.N.Y. Title 15, Chap. 28; N.Y.C. Admin. Code § 24-163.3. The law applies to any diesel-powered non-road vehicle that is owned by, operated by or on behalf of, or leased by a City agency. These efforts are complemented by recent federal action to regulate emissions from non-road vehicles. However, neither the federal regulatory efforts nor the City's Local Law 77 require the collection of data relevant to assessing the greenhouse gas emissions from these vehicles. The City believes such data would be a useful addition to the City's annual greenhouse gas inventory and would provide insight for future emissions reduction efforts.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Carrie Noteboom

Commenter Affiliation: New York City Law Department

Document Control Number: EPA-HQ-OAR-2008-0508-0641.1

Comment Excerpt Number: 2

Comment: In response to the question, "What, if any, are the specific gaps in the currently reported travel activity or emissions-related data that are important for understanding on-road mobile source GHG emissions?," the City would benefit from the collection of comprehensive vehicle registration data, to allow for a more refined analysis of greenhouse gas emissions based on vehicle types, model years, and locations of vehicles registered in different states and geographic regions. For example, the City would be able to supplement its mobile source greenhouse gas emissions analysis (currently based on modeled vehicle miles traveled (VMT) data provided by the New York Metropolitan Transportation Council) with registration data to estimate emissions attributable to New York City residents. EPA should include a reporting requirement for this information so that there is a centralized repository for these data. Additionally, to completely and accurately quantify carbon emissions from entities covered under the proposed rule, data related to employee commuting (journey-to-work), including commuting mode, time, and distance should be required to be compiled by all covered entities and included as part of their carbon footprints.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: J. Jared Snyder

Commenter Affiliation: New York State Department of Environmental Conservation

Document Control Number: EPA-HQ-OAR-2008-0508-1184

Comment Excerpt Number: 13

Comment: States will be submitting mobile inputs as part of their CERRIAERR requirements. The Department does not see the need for EPA to gather any additional information outside of these updates. EPA's MOVES model utilizes vehicle miles traveled (VMT) from traffic counts

that should already account for the activities of government and mobile source fleet operators. It should be noted that the potential exists that this information could potentially assist in refining the development of vehicle mix (specialty vehicles that are not registered or inaccurately reflected in the registration database, such as garbage trucks, taxi fleets, etc.), age distribution and mileage accumulation. Given there are approximately 10 million registered vehicles in New York, these refinements may or may not be significant enough to warrant the requests for government and mobile fleet operators. For example, would certain fleet information be significant for New York City given the concentration of certain fleets, but nowhere else in the state? EPA should work with states in determining the level of O1611 required to capture fleet information and what benefits that information will have on the mobile source inventory. The proposal mentions EPA's interest in continually updating and improving its understanding of the in-use activity and total emissions from mobile sources. Under this proposal, EPA is gathering emission rate data from engine manufacturers. Assuming that this information will potentially result in model updates, the Department is concerned that annual reporting could result in model updates that are more frequent than necessary and cautions EPA to consider the use of this information and impacts that it may have on the end users of its emissions models should submissions result in model improvements. The same holds true for the nonroad model and FAA's airport model. EPA should not require states to report additional travel activity or emissions-related data beyond what is currently required under EPA's existing reporting rules. EPA should continue to work with states during the transition to MOVES to understand the impacts model changes have on how states collect input information and to develop guidance as needed to assist states in collecting or distributing existing datasets to reflect category changes within the MOVES model. The Department believes every three years is sufficient for collection of mobile travel activity or emissions-related data. Larger metropolitan areas are all typically in nonattainment of a national ambient air quality standard in which criteria emissions reporting from the mobile sector has been on a three year cycle. That cycle should be sufficient for GHG reporting. Outside of a crediting system, fleet operation emission would be a double counting of VMT based emissions. Only in instances where EPA and state and local governments agree that additional fleet information may further refine the MOVES inputs already developed for criteria emissions estimates should fleet data collection be considered here.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Mark R. Vickery

Commenter Affiliation: Texas Commission on Environmental Quality (TCEQ)

Document Control Number: EPA-HQ-OAR-2008-0508-0666.2

Comment Excerpt Number: 12

Comment: The Executive Director of the TCEQ does not support any required reporting of additional travel activity or emissions-related data beyond what is required under existing reporting requirements for States, local governments, or other entities. The current requirements for collecting and reporting activity and emission data for on-road mobile sources provides a good balance between cost and utility. Increasing the reporting of these emissions would create an additional burden without adding useful data or information for decision makers.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Dana Blume

Commenter Affiliation: Port of Houston Authority (PHA)
Document Control Number: EPA-HQ-OAR-2008-0508-0607.1
Comment Excerpt Number: 12

Comment: EPA asks: “What non-road activity data is of most interest for understanding GHG emissions, and should EPA consider any additional requirements for reporting such data beyond what is currently required?” The nonroad activity of most interest for understanding GHG emissions is oceangoing vessels. However, PHA strongly recommends that EPA not impose additional reporting requirements for nonroad activity in the format of a State Implementation Plan (SIP). The main issue of concern is lack of consistency, (methodology, sectors, and geography) which results in market-driven adjustments and no real reductions in emissions. PHA recommends that nonroad mobile source reporting requirements and methodology should be consistent with on-road reporting requirements, as well as if imposed, applied equally across all sector sources, (i.e. rail, waterway, off-road equipment, etc.). PHA’s experience with the SIP process has proven that even the smallest operational constraints or fee increases can prove to be ineffective. For example, results often amount to additional deadlines and significant administrative expenses, generally resulting in less efficient and effective control strategies, and ultimately driving markets out of affected ports. For instance, when California imposed a small tax on bunker fuel, the entire market literally left overnight. Cargo originally destined for California ports from the Asian market began to move into and through the Gulf area. After California revoked the tax, approximately 30% of the market was unrecoverable. It is part of the port’s mission to diligently work with users, stakeholders and customers to ensure market competitiveness on many levels. If there were costly reporting requirements imposed on mobile sources entering ports within the HGB nonattainment area but not on nearby ports, within attainment or near attainment status, then it is a real and present possibility that cargo will shift to the less expensive port of call. If that were to happen not only would emissions simply shift geography, the danger is also that emissions will increase unintentionally. For example, since more than 75% of all cargo that enters the Port of Houston is destined for use in the Houston area, cargo driven out of the Port of Houston and into another port by restraints and controls will most likely be transported to the Houston area via on-road truck. Truck transportation would dramatically increase in the Houston area and GHG emissions would increase as well. Consistency among jurisdictions is therefore imperative to the success of any effort to reduce GHGs from the maritime/port sectors. The PHA reiterates that any effective emission reduction requirements must have a national (and global) approach; a regional (SIP based approach) will serve to create piecemeal efforts, economic barriers, and benefits based on geography.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Charles Kooshian
Commenter Affiliation: Center for Clean Air Policy (CCAP)
Document Control Number: EPA-HQ-OAR-2008-0508-1146.1
Comment Excerpt Number: 6

Comment: EPA asks: “Should EPA consider any threshold(s) for States, local governments, or other entities that must report additional travel activity or other emissions-related data? For example, should additional data be reported only from larger metropolitan areas with more sophisticated transportation systems (e.g., metropolitan planning organizations with an urbanized population of 200,000 or more)?” Monthly fuel sales and annual odometer data should be reported from all MPOs in order to get full coverage of GHG production. Expanded travel data

collection such as through updated travel surveys including transit, pedestrian, cycling, land use data will require increased funding for data collection, which could be included as part of federal transportation funding as suggested in Mr. Winkelman's testimony to the house [see DCN: EPA-HQ-OAR-2008-0508-1146.2].

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Charles Kooshian

Commenter Affiliation: Center for Clean Air Policy (CCAP)

Document Control Number: EPA-HQ-OAR-2008-0508-1146.1

Comment Excerpt Number: 3

Comment: Calculating GHG emissions from fuel sales and VMT data require information on lifecycle fuel carbon content and vehicle efficiency. EPA should provide default fuel GHG emissions factors and guidance for calculating average fleet fuel economy. The latter will require increased vehicle testing to better establish how GHG emissions vary with vehicle speed, acceleration and drive cycle. It will be important to coordinate and collaborate across government agencies and levels of government to support data corroboration, quality assurance, policy design and evaluation. EPA should share, compare, and integrate complementary data sets (travel, fuel sales, fuel economy, GHGs, demographics, land use) and establish procedures for data corroboration. For more detail on data improvement needs, see the "CCAP Travel Data and Modeling Recommendations to Support Climate Policy and Performance-Based Transportation Policy" developed in the CCAP VMT and Climate Policy Dialogue, available here, and included as an attachment: [http://www.ccap.org/docs/resources/613/CCAP%20Travel%20Data%20Recommendations%20\(Final%201%2030%202009\).pdf](http://www.ccap.org/docs/resources/613/CCAP%20Travel%20Data%20Recommendations%20(Final%201%2030%202009).pdf)

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Charles Kooshian

Commenter Affiliation: Center for Clean Air Policy (CCAP)

Document Control Number: EPA-HQ-OAR-2008-0508-1146.1

Comment Excerpt Number: 4

Comment: Developing, implementing and evaluating GHG reduction policies will require improved travel data and modeling capacity. The precision, resolution and quality of data and modeling needed will vary by application (planning, policy evaluation, financing, regulation). Generally though, the spatial and temporal resolution of reported travel data is too low for measuring the performance of many types of policies aimed at reducing GHG. The results of projects in one city, neighborhood, or corridor cannot be captured by aggregate data measurement. The sources of the data also vary in quality and applicability. HPMS data is considered to be accurate primarily at the state level, for example. VMT data from travel models is highly dependent on the skills and capacities of the MPO or jurisdiction that produced it. It is important to collect data at a finer grain than county level, to determine VMT and emissions as they relate to land use characteristics. Any longitudinal data that helps to measure the rate of change and the effect of various policies should be archived for easy analysis. Information about freight, the use of transit, bicycles and walking should be considered for inclusion in regular reports. For more information and specific examples of data improvement needs, see the testimony of CCAP's Steve Winkelman, Center for Clean Air Policy to the Subcommittee on

Technology and Innovation, House Committee on Science and Technology, “The Role of Research in Addressing Climate Change in Transportation Infrastructure,” included as an attachment [see DCN: EPA-HQ-OAR-2008-0508-1146.2], and available for download here: [http://www.ccap.org/docs/resources/612/Winkelman%20testimony%20\(3%2031%2009\).pdf](http://www.ccap.org/docs/resources/612/Winkelman%20testimony%20(3%2031%2009).pdf) We have also attached Mr. Winkelman’s response to questions for the record which provides more information on data and research needs attachment [see DCN: EPA-HQ-OAR-2008-0508-1146.3 and EPA-HQ-OAR-2008-0508-1146.4].

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Charles Kooshian

Commenter Affiliation: Center for Clean Air Policy (CCAP)

Document Control Number: EPA-HQ-OAR-2008-0508-1146.1

Comment Excerpt Number: 1

Comment: The EPA currently collects VMT data by roadway type at the county level every three years from State Air agencies. This data contributes to developing the National Emissions Inventory, along with motor fuel sales collated by the Department of Energy’s Energy Information Administration. EPA is not proposing any new reporting requirements. CCAP believes that additional travel activity data reporting is needed so that EPA and others can better understand how the transportation sector contributes to GHG emissions and how transportation policies can contribute to GHG reduction goals. EPA asks: “Should EPA require States, local governments, or other entities to report additional travel activity or emissions-related data beyond what is required under EPA’s existing reporting requirements? How would such data be used to inform future climate policy?” The EPA could require reporting of monthly retail motor fuel sales by county, or other smaller jurisdiction if feasible. Fuel consumption correlates directly with GHG emissions. This might be most effectively done in collaboration with the Internal Revenue Service and the Department of Energy. While fuel consumption is indirectly tracked via wholesale fuel sales data aggregated at the federal level, CCAP has identified problems in keying state GHG inventories to wholesale fuel sales data in preparing state climate plans. Namely, fuel sales can differ from fuel consumption in areas with cross-border traffic, and wholesale fuel sales may be bound for another state. Sub-state (regional, local, etc.) fuel sales data would provide an important complement to travel data and could be used in assessing policy effectiveness and improving GHG forecasts. Cross-border and through traffic issues would still need to be taken into account when using fuel sales data to estimate fuel consumption and GHG emissions, so complementary data should also be collected. Specifically, EPA could require collection and reporting of motor vehicle odometer readings annually. Programs to collect VMT odometer data could be used to corroborate Highway Performance Monitoring System (HPMS) data and fuel sales data. A number of states already collect odometer data, e.g., from vehicle inspection and maintenance (I&M) programs, but not necessarily for all passenger vehicles (some are exempt due to age or low-emission technologies). Both fuel sales and odometer data can and should be “geocoded”, or mapped to specific locations for Geographic Information System (GIS) analysis, which is important for assessing boundary adjustments and land use impacts on travel demand and fuel sales. Geographically specific travel and retail fuel sales data can help track local and regional travel behavior, improve our understanding of land use influences on travel behavior, help establish GHG baselines, aid policy evaluation and improve predictive capabilities of travel models.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Charles Kooshian
Commenter Affiliation: Center for Clean Air Policy (CCAP)
Document Control Number: EPA-HQ-OAR-2008-0508-1146.1
Comment Excerpt Number: 5

Comment: EPA asks: “Is it sufficient to collect travel activity or emissions-related data every three years as currently required, or should EPA collect such data on an annual basis, similar to other collections discussed in today’s action?” Travel activity data should be collected on an annual basis. Many VMT reduction strategies, such as pricing, have immediate effects as well as rebound effects that all occur well within a three year period. Depending on when the three year reporting is done, a skewed picture could emerge. Fuel prices could also fluctuate over that time. Performance-based transportation policy requires timely feedback. GHG reduction strategies will need to be evaluated, and possibly modified, repeatedly in order to achieve the aggressive policy targets that are being considered.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Thomas W. Easterly
Commenter Affiliation: Indiana Department of Environmental Management (IDEM)
Document Control Number: EPA-HQ-OAR-2008-0508-0525.1
Comment Excerpt Number: 15

Comment: U.S. EPA has not included in its proposal a requirement for mobile source emissions reporting, but is soliciting comments on the need to collect in-use travel activity and other emissions-related data from States and Local Governments beyond what is required under existing reporting requirements. The inclusion of mobile source data would increase the cost and burden of this rulemaking substantially. This additional cost and burden would not fill the gaps associated with what Indiana has identified as over arching concerns with this proposed rule, or provide additional benefit. The data to support estimation of GHG emissions from the mobile source sector readily exists to suit the federal government’s need. Estimating GHG emissions for mobile sources would not differ from the accounting for carbon monoxide or hydrocarbons. There is no need for the U.S. EPA to pass along any data collection responsibilities associated with mobile sources. The U.S. EPA can collect GHG data in conjunction with hazardous and criteria air pollutants from mobile sources in order to establish reliable emission factors for GHGs.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Charles Kooshian
Commenter Affiliation: Center for Clean Air Policy (CCAP)
Document Control Number: EPA-HQ-OAR-2008-0508-1146.1
Comment Excerpt Number: 2

Comment: An expanded data reporting program should also include land use, transit, pedestrian and bicycling data, which are important for assessing GHG reduction policies.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Laurie Burt

Commenter Affiliation: Massachusetts Department of Environmental Protection

Document Control Number: EPA-HQ-OAR-2008-0508-0453.1

Comment Excerpt Number: 23

Comment: EPA requested comment on the following issues regarding reporting of travel activity data by states and local governments: the reporting of additional travel activity or emissions-related data, the use for this data, any specific gaps in the currently reported data, the quality of currently reported data, the use of a threshold for reporting, the frequency of reporting, and what non-road activity data is of most interest for understanding GHG emissions. Massachusetts believes that travel activity data should be submitted by states and local governments on a triennial basis to parallel the existing EPA reporting requirements under the Air Emissions Reporting Rule and the related SIP emission inventories. Additionally, Massachusetts urges EPA to continue to require reporting for all travel activity data (i.e., no threshold). The highest nonroad emitters are aircraft, rail and commercial marine vessels, construction & industrial equipment, commercial lawn & garden and pleasure craft. Massachusetts therefore recommends that EPA expand the NONROAD model to include all GHGs from these sources. The MOVES model should also be expanded to include all GHGs. Massachusetts suggests that EPA also work with the Federal Highway Administration to improve the Highway Performance Modeling System (HPMS) in order to more adequately support this reporting rule. The HPMS should have a better reporting of vehicle speeds by roadway types in each county. Speeds are very important in determining which emission factors to use with VMT in order to accurately calculate emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Matthew Frank

Commenter Affiliation: Wisconsin Department of Natural Resources

Document Control Number: EPA-HQ-OAR-2008-0508-1062.1

Comment Excerpt Number: 42

Comment: EPA asks whether it is sufficient to collect travel activity or emissions-related data every three years as currently required, or whether EPA should collect such data on an annual basis, similar to other collections discussed in today's action. It is sufficient to collect the travel data or emissions-related data every three years. Collection on an annual basis will add significant additional burden on the states that will detract from the development of the three-year EI mandated by the Air Emissions Reporting Requirements (AERR) rule. The reporting frequency should be coordinated with the three-year cycle specified in the AERR to avoid any duplicative efforts and to encourage the most efficient development of emissions inventories.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Donald R. Schregardus

Commenter Affiliation: Department of the Navy, Department of Defense (DoD)

Document Control Number: EPA-HQ-OAR-2008-0508-0381.1

Comment Excerpt Number: 6

Comment: In Section V.QQ. of the preamble, EPA describes proposed GHG reporting requirements for manufacturers of new mobile sources, including motor vehicles and engines, nonroad vehicles and engines, and aircraft engines. EPA seeks comment on the need to collect additional in-use travel activity and other emissions-related data from States and local governments and mobile source fleet operators. DoD supports the EPA's current proposal to focus on existing reporting mechanisms to determine mobile source GHG emissions and not seek to collect additional in-use travel activity or other emissions related data from States, local governments or fleet operators. As described in the preamble, EPA has mechanisms in place to collect mobile source GHG emissions data. For example, to prepare the annual Inventory of U.S. Greenhouse Gas Emissions and Sinks, EPA leads an interagency team that includes DOE, USDA, DOT, DoD, the State Department, and others. This comprehensive, national, top-down assessment is submitted to the United Nations Framework Convention on Climate Change. EPA has long-established programs applicable to vehicle manufacturers that control vehicle and engine emissions of criteria pollutants. These programs, which include emissions standards, testing procedures, and emissions certification and compliance requirements, are a logical way to also collect GHG emissions data. As EPA describes in Section V.QQ.4. of the preamble, on-road mobile source air pollutant emissions data is collected from States through the Air Emissions Reporting Rule (AERR) that is used to develop the National Emissions Inventory. The AERR requires State air agencies to report mobile source data; including vehicle miles traveled (VMT) data at the county level by roadway type, every three calendar years. States also submit other information that can be used to estimate criteria pollutant emissions (e.g., age and speed distributions of vehicles by vehicle class and roadway type, fuel properties by county, month, and year, and temperature and humidity data by county, month, and year), and which could be expanded to include GHG emissions. The AERR also requires certain emissions-related information for nonroad mobile sources, according to similar submission requirements. Travel activity and emissions-related data is also collected by DOT through its Highway Performance Monitoring System. DOT and DOE publish statistical reports such as the Census Transportation Planning Package, National Personal Transportation Survey, and the Urban Mobility Study. In specific geographic areas, agencies such as metropolitan planning organizations, State departments of transportation, transit agencies, air quality agencies, and county planning agencies also collect and project State and local travel activity and emissions data to meet Federal requirements. In the discussion of fleet operator data, EPA states that one of the most important functions of collecting data is to inform operators about their emissions profiles and to shed light on opportunities to reduce emissions through the use of clean technologies, fuels, and operational strategies. This is a valuable result of such existing voluntary programs as the SmartWay Transport Partnership. DoD, a large fleet operator of many unique mobile sources, goes beyond the voluntary programs. DoD's current fleet vehicle programs, like those of other Federal agencies, are under mandatory requirements outlined in Executive Orders and the Energy Policy Act to improve energy efficiency. In the rule preamble and supporting documents, EPA emphasizes its goals of including source categories that emit the most significant amounts of GHG emissions, while also minimizing the number of reporters (especially small emitters), and including source categories that can be measured with an appropriate level of accuracy (Section IV.B. (74 FR 16465)). For example, in the Regulatory Impact Analysis, EPA explains the high cost and burden that would be incurred if the rule covered the commercial and residential sectors. To avoid this impact, the proposed rule does not include all of those emitters, but instead requires reporting by the suppliers of industrial gases and suppliers of fossil fuels. In a similar way, EPA should rely on already available vehicle travel data combined with the new GHG emissions data that will be supplied by manufacturers to inform future climate change

policies with regard to mobile sources. DoD recommends that EPA promulgate the GHG MRR as proposed with respect to limiting mobile source GHG reporting to manufacturers.

Response: See the response to comments EPA-HQ-OAR-2008-0508-1062.1, excerpt 40 and EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Matthew Frank

Commenter Affiliation: Wisconsin Department of Natural Resources

Document Control Number: EPA-HQ-OAR-2008-0508-1062.1

Comment Excerpt Number: 45

Comment: EPA asks: "What nonroad activity is of most interest for understanding GHG emissions, and should EPA consider any additional requirements for reporting such data beyond what is currently required?" Nonroad carbon dioxide and methane emissions can be calculated by NMIM excluding aircraft, commercial marine and railroads. Consequently, using NMIM with the latest National County Database (NCD) and any improved SLIT NMIM inputs will generate a better estimate of nonroad emissions than the approach being recommended. Factors considered in NMIM include equipment populations, fleet mix, load factors, horsepower and activity hours.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Matthew Frank

Commenter Affiliation: Wisconsin Department of Natural Resources

Document Control Number: EPA-HQ-OAR-2008-0508-1062.1

Comment Excerpt Number: 43

Comment: EPA asks: Should EPA consider any threshold(s) for States, local governments, or other entities that must report additional travel activity or other emissions-related data? For example, should additional data be reported only from larger metropolitan areas with more sophisticated transportation systems (e.g., metropolitan planning organizations with an urbanized population of 200,000 or more)? The on-road data currently reported to EPA are usually more accurate for the larger metropolitan areas. No additional thresholds appear to be needed.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Matthew Frank

Commenter Affiliation: Wisconsin Department of Natural Resources

Document Control Number: EPA-HQ-OAR-2008-0508-1062.1

Comment Excerpt Number: 41

Comment: EPA asks: What, if any, are the specific gaps in the currently reported travel activity or emissions-related data that are important for understanding on-road mobile source GHG emissions? For example, would it be helpful for EPA to better understand State- or county-level VMT growth rates (e.g., based on VMT data collected over the past five or ten years or other methodology) or emissions data related to the freight sector (e.g., hours of long-duration truck idling or truck data that was previously provided by the Vehicle Inventory and Use Survey)?

What is the quality of currently reported State and local VMT data, and should travel activity and emissions-related data quality be improved? Since fuel usage is a better indicator of on-road CO₂ emissions than VMT, the currently-reported fuel usage data, as well as the data required under this proposed rule for suppliers of petroleum products, may be beneficial for estimating on-road CO₂ emissions, or at least for providing a reasonableness check of those emissions. Fuel usage data may also be helpful for estimating or checking the on-road GHG emissions for N₂O and CH₄.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Jennifer McGraw

Commenter Affiliation: Center for Neighborhood Technology (CNT)

Document Control Number: EPA-HQ-OAR-2008-0508-0723.1

Comment Excerpt Number: 5

Comment: Many states collect odometer readings for vehicles that go through emissions testing. These data are address-specific and therefore extremely useful in tracking and modeling transportation and emissions activities at the very local level. Matched pairs of odometer readings for a single vehicle measure the distance travelled by that vehicle in the time between emissions tests. CNT used these data in the model that was the basis of the Location Efficient Mortgage. However, because these odometer data are very difficult to access, CNT has used alternative modeling techniques to expand our analysis to 330 metropolitan areas and develop our Housing and Transportation Affordability Index that demonstrates the cost of transportation and vehicle greenhouse gas emissions associated with living in a certain location. Making odometer data publicly available would create an extremely useful tool for planning and tracking local transportation demand emission reduction programs. We encourage EPA to require these data to be reported at a detailed scale with geographic labels such as ZIP + 4. Larger geographies such as ZIP Code or municipality would be less preferable, but still useful.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Amadeo Saenz

Commenter Affiliation: Texas Department of Transportation (TxDOT)

Document Control Number: EPA-HQ-OAR-2008-0508-0441.1

Comment Excerpt Number: 1

Comment: EPA asked: Should EPA consider any threshold(s) for States, local governments, or other entities that must report additional travel activity or other emissions-related data? For example, should additional data be reported only from larger metropolitan areas with more sophisticated transportation systems (e.g., metropolitan planning organizations with an urbanized population of 200,000 or more)? TxDOT suggests that if EPA requires additional information, that consideration be given to evaluating data using a tiered approach. For example, EPA could collect data from a sample of states. If the data is determined to be of value for science or policy and is sufficient at the state level, EPA could stop at that point. If additional information may be of benefit, then we suggest moving to the metropolitan planning organizations (MPOs) with an urbanized population of 1,000,000 to 3,000,000. If further information is needed, then proceed to MPOs with a population of 500,000. We would not recommend collecting information from MPOs with population lower than 200,000. The level of sophistication of travel demand data

typically is dictated by the complexity of the local traffic needs, with greater sophistication in larger urbanized areas. We would encourage EPA review sample data before proceeding to request additional information from entities with smaller populations. In determining which states to select, we suggest a sampling that includes at least differing geography and differing climates.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Jennifer McGraw

Commenter Affiliation: Center for Neighborhood Technology (CNT)

Document Control Number: EPA-HQ-OAR-2008-0508-0723.1

Comment Excerpt Number: 3

Comment: In section V.QQ.4 of this Proposed Reporting Rule EPA requests comments on travel activity and other in-use emissions related data. CNT encourages EPA to strengthen and expand its reporting requirements for transportation activity data and to consolidate the various data sources the federal government already collects. Local governments have the potential to make a big impact on transportation emissions through transportation and land use planning, parking policies, implementation of transportation alternatives, and more. Today a community that wants to conduct a complete inventory of all of its mobile source emissions and track the impacts of transportation emission reduction projects faces a big barrier in data acquisition. For example, CNT's research to develop the community greenhouse gas inventory for Chicago required the use of nearly a dozen different data sources for transportation, and ultimately some off-road mobile sources, such as recreational boating, could not be accounted for. EPA has an opportunity with these Proposed Reporting Rules to consolidate many disparate data sources on transportation activities. Smaller communities have even greater difficulty with transportation analysis than the example we gave for Chicago, because a city as large as Chicago is singled out in state VMT estimates and other data sources where county or state data are often the most detailed geography available to other communities. CNT recommends that EPA improve travel activity data reporting requirements to include data below the county level and to ensure these data are available to local governments and others. This will continue to grow in importance if the regional transportation emissions planning and goals proposed American Clean Energy and Security Act of 2009 (H.R. 2454) are enacted.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Keith Overcash

Commenter Affiliation: North Carolina Division of Air Quality (NCDAQ)

Document Control Number: EPA-HQ-OAR-2008-0508-0588

Comment Excerpt Number: 30

Comment: (1) It would be unlikely that states would have reliable (certified) and quality assured mobile source data available more frequently than the current 3 year reporting cycle for the NEI. States should have the option to not default to DOT derived Highway Performance Monitoring System (HPMS) vehicle miles traveled (VMT). The larger Metropolitan Planning Organizations (MPOs) model regions with different VMT growth rates, then this data is preferred if available. Future climate policy should be based on state specific data. (2) State VMT growth rates are a good indicator for air quality (thus GHG emissions). Collecting VMT travel data for the freight

sector would be of great value on a state and national level to improve the vehicle mix on the roadways. Better data collection on hours of long duration truck idling, truck stop and parking availability, VMT, and alternative power unit use (sales) would improve the current data available. (3) Every three years as currently required is adequate to capture mobile source emissions. Annual reporting would be costly and very much a burden to state and local agencies. (4) Larger metropolitan areas (transportation partners) currently report their more detailed output from the travel demand models (TDMs) to the state for planning and conformity purposes. The state uses the best information available for the NEI reporting year, whether it be derived from the TDMs or HPMS data. The state should continue to use the interagency consultation process to determine the best data available for any submission. Any additional requirement for reporting beyond what currently exists would presumably require a separate memorandum of agreement or rulemaking.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Jeffrey A. Sitrer

Commenter Affiliation: University of Virginia (UVA)

Document Control Number: EPA-HQ-OAR-2008-0508-0675.1

Comment Excerpt Number: 12

Comment: Reporting on air and other travel activity for universities is very problematic given the numerous lines of funding from which airline and other travel tickets are purchased. In addition, the tickets are purchased using every conceivable mode from travel agents to online sites. UVA began an assessment of our GHG inventory a couple of years ago and immediately ran into significant issues with travel resulting from the issues highlighted above. UVA does not have a central travel purchasing or tracking system. Each academic and operational department handles their own travel and in many cases, the individual handles their own travel purchases. Reviews and discussions of other academic institutions indicate that this is a common issue. While we believe that air travel is an important source GHGs, it would be best to track this through the airline industry.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Matthew Frank

Commenter Affiliation: Wisconsin Department of Natural Resources

Document Control Number: EPA-HQ-OAR-2008-0508-1062.1

Comment Excerpt Number: 44

Comment: Currently, NMIM is used to estimate most nonroad mobile emissions with the exception of following categories: aircraft, airport ground support equipment, commercial marine and locomotives. Changes to the NMIM inputs provided by the states are relatively infrequent especially during times of very limited resources. Consequently, states are unlikely to have any new activity data on an annual basis. Any changes more frequent than every three years would likely be provided by OTAQ. However, if emissions for the intervening years are needed, the most efficient way of estimating these emissions would be having EPA perform a national NMIM run using any more recent adjustments from the states. Involving the states in annual submittals would be a waste of resources. Assembling activity data for aircraft, airport ground support equipment, commercial marine and locomotives is a resource intensive process. Again,

involving the states in annual submittals would be a waste of limited resources.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Matthew Frank

Commenter Affiliation: Wisconsin Department of Natural Resources

Document Control Number: EPA-HQ-OAR-2008-0508-1062.1

Comment Excerpt Number: 39

Comment: For Mobile On-Road Reporting, Reporting requirements in the proposed rule combined with existing requirements are adequate for estimating GHG emissions from the on-road sector. The Department recommends not delegating subpart QQ to the states. EPA is well equipped to estimate the on-road emissions using long standing procedures. Delegating to states would add unnecessary workload. States would need to develop expertise in interpreting and analyzing on-road emissions data reported by manufacturers.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Keith Overcash

Commenter Affiliation: North Carolina Division of Air Quality (NCDAQ)

Document Control Number: EPA-HQ-OAR-2008-0508-0588

Comment Excerpt Number: 29

Comment: Page 19592 states AERR requires State agencies to report mobile source data including VMT data at the county level by roadway type, every three calendar years beginning with calendar year 2002. CERR is the emission reporting rule in effect for CYs 2002, 2005 and 2008. AERR was promulgated in December 2008 and is not effective until CY2009 for emissions reported annually and CY2011 for emissions reported triennially.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Dana Blume

Commenter Affiliation: Port of Houston Authority (PHA)

Document Control Number: EPA-HQ-OAR-2008-0508-0607.1

Comment Excerpt Number: 8

Comment: EPA asks: "What, if any, are the specific gaps in the currently reported travel activity or emissions-related data that are important for understanding on-road mobile source GHG emissions? The PHA has observed specific gaps in current reporting data and estimates from on-road mobile source emissions: specifically the effects on emissions from ongoing road construction and daily traffic accidents in major metropolitan areas. While emissions resulting from road construction and traffic accidents in rural areas or areas with populations of less than 500,000 may be insignificant; in major metropolitan areas exceeding populations of 500,000, road construction and traffic incidents cause major delays on a daily basis, numerous times of the day, and in multiple locations. The travel demand model inputs, such as speed, and resulting VMT factors do not account for recurring emissions from frequent and ongoing road

construction and traffic incidents in major metropolitan areas. In order to capture this existing gap, EPA might consider incorporating the real-time data from freeway incident management entities; such as Houston Transtar, which utilizes more than 600 regional closed circuit television cameras (CCTVs), monitoring accident scenes, road debris, and hazardous materials, and communicating the most direct routes to emergency vehicles and tow trucks. Additionally, PHA notes that on-road truck idling at warehouses, distribution centers and other facilities is not incorporated in the travel demand model or the mobile emissions model. PHA recommends establishing a national idling policy and requiring, for example, control devices to be installed by the OEMs. Local idling policies are expensive to create, monitor and enforce and are inefficient in reducing GHG emissions. The costs associated with verifying and enforcing truck idling would divert limited local dollars from implementation of projects having greater cost effectiveness for emission reductions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Dana Blume

Commenter Affiliation: Port of Houston Authority (PHA)

Document Control Number: EPA-HQ-OAR-2008-0508-0607.1

Comment Excerpt Number: 9

Comment: EPA asks: "What is the quality of currently reported State and local VMT data, and should travel activity and emissions-related data quality be improved?" The quality of data collected, specifically in major metropolitan areas is sufficient.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Dana Blume

Commenter Affiliation: Port of Houston Authority (PHA)

Document Control Number: EPA-HQ-OAR-2008-0508-0607.1

Comment Excerpt Number: 10

Comment: EPA asks: "Is it sufficient to collect travel activity or emissions-related data every three years as currently required, or should EPA collect such data on an annual basis, similar to other collections discussed in today's action?" The collection of data every 3 years is sufficient; advanced modeling is amply sophisticated and includes comprehensive forecasting. An annual collection of data will increase inefficiencies and decrease cost-effectiveness.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Dana Blume

Commenter Affiliation: Port of Houston Authority (PHA)

Document Control Number: EPA-HQ-OAR-2008-0508-0607.1

Comment Excerpt Number: 11

Comment: EPA asks: "Should EPA consider any threshold(s) for States, local governments, or other entities that must report additional travel activity or other emissions-related data?" Other than emissions related to road construction and traffic incidents, no additional data reporting is

needed from large metropolitan areas.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

Commenter Name: Dana Blume

Commenter Affiliation: Port of Houston Authority (PHA)

Document Control Number: EPA-HQ-OAR-2008-0508-0607.1

Comment Excerpt Number: 7

Comment: The EPA asks: “Should EPA require States, local governments, or other entities to report additional travel activity or emissions-related data beyond what is required under EPA's existing reporting requirements? How would such data be used to inform future climate policy?” The PHA acknowledges the importance of emissions data in the effort to establish and refine future climate policies and regulations to lessen the global impacts of greenhouse gas emissions. At this time, no additional travel activity or emissions-related data is needed under EPA's existing reporting requirements because current and proposed EPA rules include the testing and reporting of GHG and NAAQS emissions from mobile sources. The PHA respectfully recommends that EPA concentrate on creating national standards and promoting international standards for all mobile sources. Existing regulatory requirements emphasize reliance on local, regional, and state entities for the reduction of emissions from mobile sources, yet these entities often have no authority to either regulate or enforce standards. Furthermore, mobile sources cross municipal, county, and state boundaries, as well as international borders, emphasizing the need for national and international standards, rules, and regulations. The PHA requests EPA to focus on real and sustainable measures and policies in seeking rapid reductions of greenhouse gas emissions. Comprehensive national and international standards will provide additional data with implementation efforts; whereas requiring additional reporting of travel activity or emission related data will not alone reduce emissions. Additional reporting requirements may also encourage market variables to shift behavior to other areas that require less stringent reporting, thereby avoiding additional reporting, decreasing data reliability, and ultimately preventing or stalling real and quantifiable reductions in the emission of GHG from mobile sources.

Response: See the response to comment EPA-HQ-OAR-2008-0508-1062.1, excerpt 40.

4. GENERAL VEHICLE AND ENGINE MANUFACTURER PROVISIONS

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 1

Comment: The Proposed Rule also states that "the mandatory GHG reporting rule would help to improve the development of future national inventories for particular source categories or sectors by advancing the understanding of the emission processes and monitoring methodologies . . . [I]t can serve as a useful tool to better improve the accuracy of future national-level inventories."

(FR 47: 16455.) The proposed GHG Reporting Rule would require all engine and vehicle manufacturers to implement test procedures to measure and report the levels of CO₂, CH₄, and N₂O for all new engines or vehicles. The testing and reporting of GHG emissions would be completed as part of the existing EPA engine and vehicle certification program. But, the proposed extensive GHG emissions testing program is not needed to fulfill EPA's stated objectives and is not aligned with the GHG reporting requirements for stationary sources. First, in order to comply with the proposed mobile source GHG reporting requirements, engine and vehicles manufacturers would have to develop and implement additional testing and analytical procedures at all of their testing facilities to determine the precise levels of CO₂, CH₄, and N₂O emissions for each engine family. The results would then be reported to EPA on an annual basis as part of the new engine or vehicle certification procedure. The metric for the three GHG gases would be reported in terms of grams per kilowatt-hour. The resulting engine-out GHG emissions data would provide detailed and very specific emissions levels for each new engine family, but would not provide the Agency with any additional GHG emissions data from integrated vehicles and equipment in-use. Accordingly, the proposed emissions test program for each engine family is not needed to fulfill the stated objectives of the proposed rule. Existing information on GHG emissions from various types of engines and fuels are readily available from EPA testing programs and the published technical literature. Such information provides a sufficient basis for EPA to determine whether additional regulatory GHG actions are needed pursuant to Sections 202, 213, or 231 of the Clean Air Act ("CAA"). Even if EPA believes that additional engine or vehicle emissions information is needed as part of any CAA regulatory review, there is no need to require the entire engine and vehicle manufacturing sector to test each and every engine family or vehicle configuration in order to gather such data. As EPA frequently has done in the past, any information gaps could be filled through a specific and targeted research and testing effort. Such research efforts could be completed at a fraction of the cost needed to implement the comprehensive and industry-wide testing and reporting requirements proposed in the GHG Reporting Rule. Second, the detailed information collected through the proposed GHG testing program is not needed to develop or refine a national GHG emissions inventory. In fact, EPA already is producing a comprehensive and detailed GHG emissions inventory, and has been doing so for some time. That inventory uses existing data relating GHG emissions to fuel burned in mobile source engines. The relationship between CO₂ emissions and gallons of fuel consumed is well- established and based on sound scientific knowledge. Information collected as a result of laboratory-based engine-specific emissions testing -- especially with respect to CH₄ and N₂O -- will not yield any meaningful, additional data in that regard, and so is not needed to complete a comprehensive and accurate national emissions inventory. GHG emissions factors for mobile sources exist and can provide valid estimates of GHG emissions.

Response: EPA received a number of comments expressing concerns about several aspects of our proposed provisions for measurement of N₂O and CH₄ emission rates. We have considered all of these comments, and have decided to finalize several provisions that we have concluded will facilitate compliance for manufacturers without seriously compromising the amount and quality of emissions information that EPA will receive.

1. Relative Size of N₂O and CH₄ Emissions

Many commenters stated that, compared to CO₂, N₂O and CH₄ emissions are small, and that the value of the test data from manufacturers does not warrant the proposed reporting burden. While N₂O and CH₄ emissions are relatively small compared to CO₂, we have concluded that it is important for EPA to continue to increase our understanding of N₂O and CH₄ emissions from mobile sources, since (especially for N₂O) little test data is available on many

engines, and since current emissions modeling relies on assumptions based on a limited number of field surveys. Information on mobile source N₂O and CH₄ emissions, both directly through manufacturer testing as well as from other sources, will improve emissions modeling and help us to track emissions impacts from changes in technologies and policies over time.

2. Cost of N₂O and CH₄ Measurement Equipment

Many commenters stated that the cost of acquiring and installing N₂O and CH₄ measurement equipment in their testing facilities, as well as other ancillary costs would be excessive. We have concluded that the costs to upgrade a test cell are not trivial, but are reasonable given the current and future value of the data for modeling and understanding technological trends. We expect that the average manufacturer will experience one-time total costs of \$50-60,000 per test cell for N₂O and a similar cost per cell for CH₄. Some manufacturers currently have CH₄ measurement equipment. Further, as discussed below, we expect some manufacturers to postpone or avoid the costs of installing new measurement equipment by providing acceptable alternate information, as described below.

3. Leadtime

We agree with comments suggesting that because measurement of N₂O and CH₄ emissions, especially N₂O, is currently not widespread, it is appropriate to allow additional time for manufacturers to procure and install currently the necessary measurement equipment. We have concluded that a one-model-year delay in reporting requirements for CH₄ and a two-model-year delay for N₂O are appropriate, and are finalizing starting model years of 2012 for CH₄ and 2013 for N₂O.

4. Carrying Over Certification Test Data

Some commenters asked that EPA clarify its policy toward engines for which emissions data is carried over from earlier model years. It is our intent that new testing be required only for newly-certified engines, and not for carry-over engines, and have clarified the rule accordingly.

5. Focusing N₂O Reporting on Engines with NO_x Controls

Since the chemical mechanisms for the formation of N₂O are generally associated with catalytic aftertreatment technologies designed to reduce NO_x emissions, we are focusing N₂O reporting requirements on engines with NO_x aftertreatment technology. Manufacturers of engines that do not depend on NO_x aftertreatment would not be subject to the new requirements.

6. Providing Test Data from Alternate Sources

We are finalizing manufacturer reporting requirements for N₂O and CH₄ emission rates in order to understand current emissions of these GHGs and to monitor potential changes as technologies and policies change in the future. While test data specific to as many certified engines as possible is clearly preferable, we have concluded at this time that test-based data on other engines that is reasonably related to an engine being certified can in most cases serve the purposes of N₂O and CH₄ reporting under this rule. We have also concluded that manufacturers may be able to provide test data (and/or other information including engineering judgments based on test data) that would give EPA a reasonable basis for estimating the expected N₂O and CH₄ emission rates for their engines. Therefore, we are including a provision in this final rule

that would allow a manufacturer the opportunity to omit N₂O and/or CH₄ testing requirements if they provide such appropriate alternative test data.

7. Comments Related to CO₂ Measurement

Some commenters pointed out that manufacturers report fuel flow data from testing, and suggest that this could suffice for purposes of this rule. EPA has concluded that in addition to reporting fuel flow data, requiring manufacturers to also report their CO₂ emission rates is important, appropriate, and creates little additional burden. Manufacturers generally measure CO₂ emissions as a matter of course, and there is value to EPA having this directly-measured data on this primary mobile source greenhouse gas. It is true that we could fairly approximate CO₂ emissions from fuel flow rates but this would involve a number of assumptions and computations; this should not be necessary since manufacturers already have CO₂ emissions quantified in the units that are most useful for accurately estimating emission inventories (generally in g/kW-hr or g/bhp-hr).

8. Need for CO₂ Reporting

A few commenters questioned EPA's rationale for requiring reporting of CO₂ emission rates. However, CO₂ is the most significant mobile source GHG, and EPA has concluded that the data reported as a result of this rule will be valuable in supporting emissions modeling and in understanding technological developments among all engines. CO₂ is almost universally measured and widely reported to EPA already, and we do not expect that any new reporting due to this rule will create a significant burden.

Commenter Name: See Table 1

Commenter Affiliation:

Document Control Number: EPA-HQ-OAR-2008-0508-0635

Comment Excerpt Number: 57

Comment: We support EPA's proposed requirements for GHG reporting of mobile sources. Contributing 29.3 percent of total U.S. emissions, mobile sources are second only to electricity generation among American contributions to carbon pollution and must be controlled to avoid the worst impacts of global warming. Effectively controlling GHG emissions from mobile sources requires accurate reporting and accounting of GHG emissions from all vehicle types, including on-road and off-road vehicle, aircraft and marine vessels. In general, the mobile source emission rates that will be reported under this program will allow essential understanding of the factors behind mobile source emissions, and improvements to the models used to project those emissions by vehicle category. Such emission rate reporting will be a critical adjunct to the direct emissions reporting for non-mobile sources. Requiring engine and vehicle manufacturers to measure and report emissions data for multiple GHGs is an extension of the current emissions testing process, and is feasible because CO₂ is already extensively measured and reported through the testing and certification process.

Response: We generally agree, and are finalizing reporting requirements for all mobile source GHGs, except light-duty vehicles.

Commenter Name: See Table 1

Commenter Affiliation:

Document Control Number: EPA-HQ-OAR-2008-0508-0635

Comment Excerpt Number: 59

Comment: For light-duty and heavy-duty vehicles, measuring CH₄ and N₂O requires only modest additional equipment to that used for CO₂ testing.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0715.1, excerpt 1.

Commenter Name: Jack Gehring et al.

Commenter Affiliation: Caterpillar Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0499.1

Comment Excerpt Number: 3

Comment: EPA's own data demonstrates that CO₂ emissions from the transportation sector account for over 98% of the total GHG emissions (2007 U.S. EPA Inventory of Greenhouse Gases, in tCO₂e). N₂O accounts for approximately 1.6%, and CH₄ accounts for 0.1%, of such emissions, measured as CO₂ equivalent emissions. Multiple additional sources of information show that the level of CO₂ equivalent emissions for N₂O and CH₄ is very low—de minimis—compared to CO₂. [Footnote: For example, the Southwest Research Institute (SRI)'s recent measurements of Low NO_x 2010 on-highway test engines yielded N₂O emissions results, in CO₂ equivalent emissions, ranging from 1.00% to 1.88% of total CO₂ equivalent emissions. In 2007, SRI testing demonstrated that N₂O emissions from four 2007 compliant engines ranged from 0.2% to 1.2%, and CH₄ emissions ranged from 0.03% to 0.08% (barely detectable levels), of total CO₂ equivalent emissions.] Yet, the proposed Reporting Rule would require measurement and reporting of N₂O and CH₄ emissions. EPA does not explain why measurement of the de minimis emissions of these compounds is justified, or why manufacturers should spend significant money and resources to measure and report such emissions accurately. Nor does EPA explain how requiring N₂O and CH₄ reporting supports its stated goal of balancing the Reporting Rule's coverage while maximizing the amount of emissions reported, and "excluding small emitters." Excluding de minimis emissions of CH₄ and N₂O from diesel engines would serve this goal, based on EPA's own data and scientific evaluations of both current (2007) and future (2010) diesel engines. If it insists on measuring de minimis GHG emissions, EPA should consider relying on its own rationale in the stationary source provisions of this same Reporting Rule. In its consideration of CH₄ and N₂O reporting requirements for stationary (fuel combustion) sources, EPA recognized that existing, standard emissions factors, based on the amount of fuel consumed, can yield sufficiently accurate data, and further, "considered several alternative CO₂ emission calculation methods of varying stringency for stationary combustion units. The most stringent method would have required all combustion units at affected facilities to use 40 CFR Part 75 monitoring methodologies." EPA did not pursue this option because "for homogeneous fuels, this additional cost burden would probably not lead to significant increases in accuracy...." Reporting Rule, 74 Fed. Reg at 16484. Because the formation rate of N₂O and CH₄ is relatively constant within engine and after-treatment technologies for a given fuel, emissions factors that account for engine size and emission control technology can be obtained and used, generating adequate accuracy at a fraction of the cost of direct measurement. EPA should apply the same consideration and rationale to diesel engine reporting requirements, and pursue a more cost-effective and value-added option. If in fact the benefits of measuring such de minimis,

non-CO₂ emissions from diesel engines justify the costs of measuring, accounting, monitoring and addressing non-CO₂ GHG components in this sector, EPA should make and support its case. It has not done so, and therefore, the record does not support EPA's addition of significant regulatory complexity and costs for returns of negligible value and limited accuracy.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: J. Southerland

Commenter Affiliation: None

Document Control Number: EPA-HQ-OAR-2008-0508-0165

Comment Excerpt Number: 23

Comment: There is little justification for testing engines or involving the owners and use of vehicles (for carbon dioxide). An increased attention to and mechanisms for tracking the overall quantity of each fuel used would provide an enhanced estimate of emissions as each fuel burns stoichiometrically and does not depend on other factors such as speed, load and individual routes. Once emitted, they are global. These factors result in the use of more or less fuel and thus a straight forward means of estimating emissions with greater accuracy and much greater simplicity. In addition, there would be much less opportunity to make those ordinary foolish mistakes in the assembly of thousands of data points/values.

Response: We have concluded that tracking upstream fuel-related GHG emissions as well as engine-based emission rate data are not contradictory and that both are important, and this final rule requires reporting of both in most cases.

Commenter Name: Alan Lloyd

Commenter Affiliation: International Council on Clean Transportation (ICCT)

Document Control Number: EPA-HQ-OAR-2008-0508-0697.1

Comment Excerpt Number: 1

Comment: We strongly recommend that EPA implement a robust mandatory reporting requirement for greenhouse gases (GHGs) covering large manufacturers of mobile source engines and vehicles, including aircraft and aircraft engines.

Response: We agree and are finalizing a broad GHG reporting rule.

Commenter Name: Jack Gehring et al.

Commenter Affiliation: Caterpillar Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0499.1

Comment Excerpt Number: 1

Comment: The proposed Reporting Rule states that GHG emissions data obtained as a result of the rule's reporting requirements would help inform and thus help develop effective policies to reduce or control GHG emissions. But in reality, data that might be gathered from the complex new reporting mandates in the rule would provide little new information with respect to diesel engine emissions. Today, diesel engine manufacturers already report fuel rate for new certification tests to EPA. The relationship between CO₂ emissions per gallon of fuel consumed

is well established and based on sound scientific knowledge. Since CO₂ emissions rates are directly related to fuel consumption rate, fuel rate information alone is more than enough for EPA to accurately estimate CO₂ emission rates for these diesel engines.

Response: EPA has concluded that in addition to reporting fuel flow data, requiring manufacturers to also report their CO₂ emission rates is important, appropriate, and creates little additional burden. Manufacturers generally measure CO₂ emissions as a matter of course, and there is value to EPA having this directly-measured data on this primary mobile source greenhouse gas. It is true that we could fairly approximate CO₂ emissions from fuel flow rates but this would involve a number of assumptions and computations; this should not be necessary since manufacturers already have CO₂ emissions quantified in the units that are most useful for accurately estimating emission inventories (generally in g/kW-hr or g/bhp-hr).

Commenter Name: Jack Gehring et al.

Commenter Affiliation: Caterpillar Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0499.1

Comment Excerpt Number: 5

Comment: Other key concerns are the technical ability to measure N₂O using a Non-dispersive Infrared Analyzer (NDIR) [Footnote: Proposed method in proposed 40 CFR Part 1065, Section 1065.257] in certification test cells—this capability does not exist today. In order to comply with this proposed Reporting Rule, Caterpillar would need to acquire and install new, additional equipment for each test cell, at an estimated cost of approximately \$50,000 per test cell (hardware alone). In addition to hardware, there will be hundreds of engineering hours expended to program the software needed for data acquisition. If Caterpillar were forced to update just 10 test cells to perform this additional measurement and reporting for all engine families (which would be far less than the actual number of test cells that would need to be dedicated to this effort), the total cost would approach \$750,000. [Footnote: If a ‘bag mini diluter’ would be required, this sub-component would cost an additional \$120,000 per test cell.]

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Jack Gehring et al.

Commenter Affiliation: Caterpillar Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0499.1

Comment Excerpt Number: 7

Comment: As EPA is aware, development of testing protocols, modification of test cells, and interim/final testing of engines in preparation for the onset of Tier 4 engine standards is an extremely time-consuming, multi-billion dollar effort. The Reporting Rule should avoid placing additional cost and resource burdens on manufacturers already straining to meet established regulatory deadlines for Tier 4 development and introduction. First, the proposed Reporting Rule adds language to 40 CFR part 1065 that requires certification test measurements to be “dilute batch sample[s].” In practice, this requirement would limit certification tests to the Constant Volume Sample (CVS) tunnels and would require an additional investigation/investment in a bag sampling system, a prohibitively expensive requirement for Tier 4 engines rated at/above 560kW. Apart from the cost, significant changes to certification test cell dynamometers would also create a serious capacity crunch, reducing the already limited availability of these test cells

due to on-going development of Tier 4 Interim and Tier 4 Final emissions standards. Caterpillar therefore requests that EPA consider a more practical alternative, widely accepted in the industry, of using continuous raw/dilute data to meet Part 1065's measurement criteria for engines rated at/above 560kW. EPA should also reconsider the proposed Reporting Rule to the extent it requires re-test of either Tier 4 Non-Road and Tier 3 Flex Exemption Engines. As explained above, Caterpillar currently cannot measure N₂O in its certification test cells, and the ability to do so accurately is at least nine to twelve months away, in a best-case scenario. Beginning later this year and continuing into 2010, Caterpillar will begin the (expensive) certification testing process for Tier 4 Interim non-road diesel engines. Requiring retesting of Tier 4 engines one or more years after the 2009/2010 certification test process cannot be justified based upon the minor contributions to GHG emissions inventory accuracy that such additional testing would yield. The shortage of test cell capacity, noted above, would be particularly acute during the highly impacted Tier 4 Final Certification period. Such limited test cell capacity would make re-testing of additional engines (including Tier 3 Flex-Exemption engines, which Caterpillar likely would not otherwise need to re-test) time-consuming and hinder Tier 4 compliance efforts. Given these counterproductive effects and unsubstantiated benefits (if any) of the re-testing requirements of the Reporting Rule, EPA should clarify that the Reporting Rule will not require engine manufacturers to re-test already-certified Tier 4 or Tier 3 Flex-Exemption engines.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpts 1 and 21.

Commenter Name: Nancy N. Young

Commenter Affiliation: Air Transport Association of America, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0522.1

Comment Excerpt Number: 8

Comment: While having manufacturers also report GHG emissions in terms of emission rates differs from the direct reporting of tons per year of emissions proposed for stationary source categories addressed elsewhere in the Proposed Reporting Rule, manufacturer reporting serves the basic objectives of accuracy, building upon existing programs and methodologies and minimizing burdens. As EPA notes, the Agency will be able to use the GHG emission rate data from manufacturers with existing models and other information to project tons of GHG emissions for the various mobile source categories.

Response: EPA is finalizing our proposed rate-based GHG emission reporting approach.

Commenter Name: Meg Voorhes

Commenter Affiliation: Social Investment Forum

Document Control Number: EPA-HQ-OAR-2008-0508-0657.1

Comment Excerpt Number: 7

Comment: We question why engine manufacturers are allowed to delay reporting until the 2011 model year. Since engine manufacturers will report an emissions rate rather than absolute emissions levels, we presume that manufacturers can calculate and disclose the rates for engines they manufacture for the 2010 model year by March 31, 2011.

Response: While we encourage manufacturers to report any GHG emission rate data available before model year 2011, and this is already required in some cases, we have concluded that it is appropriate not to require reporting before that model year. The testing and reporting of data for the certification process for a given model year often begins six or even twelve months before that calendar year starts. Many manufacturers have already submitted their certification applications for model year 2010; we have concluded that it would be problematic to require them to submit additional information to support a certification application after we have already approved the application. Given this need for lead time, and for consistency across the industry, we are finalizing CO₂ reporting requirements beginning with model year 2011.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 11

Comment: There is no need to implement an expensive testing program to determine the concentration of CH₄ and N₂O gases in engine or vehicle exhaust. The formation of those gases is determined by the engine's combustion technology, the properties of the fuel, and the emissions control technology used to reduce NO_x and HC emissions. For a given engine technology and fuel (i.e., diesel compression-ignition, or gasoline-fueled spark ignition), the emissions of CH₄ and N₂O will be relatively stable and so can be estimated using basic information on engine exhaust characteristics. Emissions factors that account for engine size and emissions control technology can be used to estimate emissions rates, as EPA has already done. Consequently, there is no compelling or justifiable reason to require manufacturers to test and report the level of GHG emissions for each engine family.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 5

Comment: The draft GHG Reporting Rule requires engine and vehicle manufacturers to begin reporting GHG emissions as part of their certification process for products starting with the 2011 model year. Such an implementation date is not feasible given the lead-time required to purchase, install, and test the needed emissions measurement hardware and software as well as to work with EPA's Office of Transportation and Air Quality (OTAQ) to revise the mobile source certification reporting templates. Engine manufacturers are currently implementing a series of important new EPA regulations to significantly reduce emissions of criteria pollutants from mobile sources. Those regulations include the 2010 emissions standards for heavy-duty on-highway vehicles, Tier-4 nonroad equipment emissions standards, small and large Spark-Ignition Rules, new requirements for marine engines, the Heavy-Duty On-Highway Onboard Diagnostics (OBD) rule, as well as other EPA and State of California requirements. With limited and restricted resources, engine and vehicle manufacturers are experiencing unprecedented pressures on their financial and personnel resources in order to develop the requisite emissions control technologies and to adjust and upgrade the emissions testing and certification procedures impacted by the new rules. The additional workload created by the proposed GHG reporting

requirements -- especially with respect to the new proposed requirements to measure and report specific levels of CH₄, and N₂O -- would increase the already-significant and cumulative burdens and costs that result from all of the pending regulatory changes. More critically, in addition to resource constraints, considerable lead-time is required to install the needed test instrumentation and procedures required for CH₄ and N₂O sampling and testing. Model year 2011 emissions testing and certification will be initiated in mid- 2010, and there is simply insufficient time to procure, install, integrate, and verify the sampling and analytical equipment needed to include GHG emissions data with 2011 model year certification testing. This is particularly true since the regulations governing that testing are not likely to be final before January 2010. Moreover, for small spark-ignition nonroad engines, recently adopted EPA regulations will require the implementation of Part 1065 compliant test equipment for new emissions testing beginning with the 2013 Model Year. The proposed requirement to report CH₄ and N₂O would force those small engine manufacturers to implement Part 1065 emissions bench upgrades years earlier. Many of those emissions test systems can not be upgraded and will need to be replaced. This wholesale upgrade needed for small engine manufacturers cannot be accomplished in accordance with the GHG Reporting Rule timeline. As a consequence, there is insufficient lead time to report GHG testing results for CH₄ and N₂O for the 2011 model year engines. If EPA decides to proceed with a requirement for actual emissions testing instead of adopting EMA's recommended approach to utilize emissions factors, then ample lead time must be provided, and the GHG Reporting Rule implementation date must be at least Model Year 2013 or later.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 21

Comment: Subpart 1065C, section 257(c): Artifact formation, SO₂, and H₂O removal. Delete this section altogether. Current emission test sites read the diluted exhaust sample bags shortly after they are filled, typically less than 30 minutes, by CFR regulations (ex, Part §86 subpart B for light duty, Part §86 subpart N for heavy duty, and the new Part §1065). It is our understanding this artifact formation concern takes many hours or possibly days to be appreciable. Unless there is current data supporting a significant impact to the analysis, recommend this requirement be dropped. Placing sorbent cartridges in the bag fill system will require a duplicate (parallel) bag sampling system and complex algorithm's to purge, evacuate and leak test these separate bags, along with asynchronous fill and read algorithms for the analysis benches and test site computer systems, as compared with the current diluted sample bags. The reason duplicate bags are needed is the concern over what detrimental impact sorbent cartridges will have over other emission constituent measurements such as hydrocarbons, NO_x, CO, CO₂, oxygenated hydrocarbons such as ethanol and methanol, and carbonyls, etc. Also since H₂O is being removed, we would have to correct for H₂O removed on the concentration, and this measurement is not simple (require humidity measurements or other complex algorithms be implemented ahead and behind the sorbent cartridges). Instead of adding this complexity, along with any unknown detrimental impacts to current sampling systems, recommend the continued use of today's robust sample bag system or dilute modal (continuous) sampling systems with conventional analysis. Doing this minimizes test site hardware and software impacts, but doesn't eliminate all changes needed. Obviously one new analyzer would have to be procured, then

engineered into the current analysis bench (controls, diagnostics, procedures, calculations, etc), and computer software changed to properly control the measurement process and accurately report the data. The SO₂ amount in diesel exhaust is usually very small (with the exception of marine applications). Also if you analyze the bags within 1 hour the chance of any artificial N₂O forming is minimal (see paper by Muzio et al., JAPCA 39, 287-293 "Error on grab sample measurement of N₂O from combustion sources"). Instead consider specifying that the bags are analyzed directly after the test cycle (or at latest within 1 hour). In which case (c) can be deleted entirely. If EPA do choose to keep it in then the grain size of Ca(OH)₂ and P₂O₅ needs to be specified for sure.

Response: Commenters expressed a number of technical concerns related to the proposed methods for measurement of N₂O and CH₄ emission rates. As discussed elsewhere in this document, we are incorporating several changes in the proposed program that will facilitate compliance with the N₂O and CH₄ reporting requirements, including extending the lead time, limiting the N₂O requirements to engines with NO_x aftertreatment equipment, and allowing manufacturers to submit appropriate alternative information in order to omit N₂O and CH₄ testing. As a result of these provisions in the final rule, manufacturers in a number of cases will not need to perform emission tests on their engines and vehicles for a given model year. For the remaining engines and vehicles, manufacturers will be required to test (or may choose to test), and we believe it is necessary for the test procedures to be extremely robust and practical.

Since the proposal, we have become aware of the need for many technical improvements to the proposed N₂O test method. Commenters reinforced these technical issues by suggesting a number of additional improvements. Commenters also raised several technical concerns about the existing CH₄ testing protocol in the context of these reporting requirements. Detailed technical concerns identified by EPA and the commenters include the ability of the proposed N₂O method (the non-dispersive infrared (NDIR)) test procedure to measure low levels of N₂O with sufficient accuracy as well as many improvements that would make the procedure more practical and efficient.

EPA has considered each of these technical issues and agrees with them. We have made many improvements to the proposed test procedure regulations that respond to these concerns. In the case of N₂O, we are finalizing three additional acceptable N₂O test procedures from which manufacturers will be able to choose the most appropriate, accurate, and economical for their engines and vehicles. We incorporated the technical suggestions from the comments into each of the four N₂O test procedures as well as into the existing CH₄ procedure.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 6

Comment: The GHG Reporting Rule proposes that manufacturers of mobile sources use existing EPA sampling and analytical methods to measure CO₂ and CH₄, although there is recognition that not all manufacturers currently need to measure, or indeed are measuring, CH₄ levels. There is, however, currently no approved method to measure N₂O emissions from engines and vehicles as part of the certification process, and so EPA has proposed adding a new method to 40 CFR Part 1065, more specifically Section 1065.257 – Nondispersive N₂O Infrared

Analyzer. EMA members have reviewed the proposed methodology and believe that it is not adequate and must be revised prior to implementation. There are a number of technical and process issues with the proposed N₂O methodology. In addition, there are a number of technical issues regarding the existing CH₄ protocol and how to calculate CH₄ emissions with nonmethane cutters. A significant issue is that many small spark-ignition nonroad engine manufacturers currently utilize raw gas emissions sampling systems. The proposed Part 1065.257 procedure to sample N₂O emissions explicitly applies to dilute sampling systems meaning that either all spark-ignition engine manufacturers will have to add new expensive dilute sampling systems and convert to dilution sampling, or a new and separate procedure will have to be added to Part 1065 to allow raw gas sampling. The net result is that both the N₂O protocol and the CH₄ protocol need to be revised, approved, and incorporated into Part 1065 prior to the implementation of any GHG testing and reporting requirements. Engine manufacturers cannot begin to start planning for such testing until after the protocols are final, thus adding to the infeasibility and unreasonableness of providing GHG emissions data for the 2011 model year.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 8

Comment: Engine manufacturers will undoubtedly have carryover engine families for the 2011 model year. If EPA should decide to require GHG testing for new model year engines, the requirement to complete GHG emissions testing should not apply to carryover engine families. The expense to conduct re-testing on a carryover engine family would be very high, and the marginal cost to produce emissions data just for CO₂, N₂O and CH₄ from such engines would make the extra testing extremely cost-inefficient. In addition, such testing would necessarily use up valuable and limited test cell resources and thus potentially disrupt normal certification testing or cause manufacturers to expend very limited available resources for new facilities or to contract with external testing facilities in order to meet the peak testing demand. The final rule, therefore, should not require manufacturers to re-test any carryover engine families for GHG emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 4

Comment: EMA believes that the already-established emissions factor method should be used in lieu of the proposed testing and measurement requirements. In fact, EPA is currently using that approach to determine GHG emissions for the national GHG emissions inventory and the Climate Leaders Program. According to the most recent GHG emissions inventory, mobile source emissions can be accurately calculated by identifying the various fuel types used in mobile sources, quantifying the annual fuel consumption for each type of fuel, and then calculating CO₂ equivalent emissions using standard emissions factors. In addition, the inventory

report indicates that the mobile source emissions are calculated using Tier 2 methods and information. Fuel use for mobile source sectors also is tracked and available from the U. S. Department of Energy, Energy Information Agency. This method of calculating GHG emissions from mobile sources and the transportation sector is consistent with the IPCC methodology, and therefore compatible and adequate for use in global comparisons. EPA also has endorsed, and is currently using, the same approach to calculate GHG emissions from mobile sources associated with EPA's Climate Leaders Program. In its guidance document published in May 2008, EPA provides a methodology that participants in the Climate Leaders Program can use to calculate GHG emissions from mobile sources. The methodology covers CO₂, CH₄, and N₂O emissions resulting from the operation of owned or leased mobile sources. The protocol details a method to calculate GHG emissions that relies on determining the amount of fuel combusted, completing calculations based on the carbon and energy content of the fuel, and then determining GHG emissions by applying a standard emissions factor. The guidance document provides conversion factors, factors to calculate the carbon and energy content of various fuels, as well as GHG conversion factors for a variety of mobile source applications. The end product of applying the protocol is an estimate of the GHG emissions from the fleet of mobile sources controlled by the various Climate Leaders participants. Thus, it is clear that EPA already has developed acceptably accurate methods to determine GHG emissions from mobile sources. Significantly, those approved fuel-based methodologies do not require expensive GHG emissions testing, and specifically do not require new and costly measurement systems and protocols for CH₄, and N₂O. Those same fuel-based methodologies should be used to determine and report GHG emissions from all engines and vehicles under the GHG Reporting Rule.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 9

Comment: The vast majority of greenhouse gas emissions associated with the combustion of fuels from mobile sources -- more than 98% -- are CO₂ emissions. The GHGs associated with mobile sources as reported in the U. S. EPA inventory of greenhouse gases (in units of CO₂ equivalent emissions) are shown in the following table [see DCN:EPA-HQ-OAR-2008-0508-0424.1 for graph showing 2007 GHG emissions from transport]. CO₂ comprises over 98% of the total GHG emissions from transportation sources, with CH₄ making-up only 0.1% and N₂O only 1.6%. Both CH₄ and N₂O emissions have a greater climate forcing potential than CO₂. However, the actual amounts of CH₄ and N₂O released by mobile sources are much smaller than CO₂ on an absolute basis. Compared on a tons-emitted basis, CH₄ represents only 0.006 percent and N₂O only 0.005 percent of the mobile source greenhouse gases emitted, demonstrating that CO₂ emissions are clearly the dominant and most important GHG emitted by mobile sources. The data also demonstrate that CH₄ and N₂O emissions are not at all significant. In addition, the data from U.S. EPA's greenhouse gas inventory also demonstrate that both CH₄ and N₂O emissions are declining. Referencing Table ES-2 of the most recent inventory, EPA reports that CH₄ emissions from mobile sources have declined from 4.7 Mtons CO₂e in 1990 to 2.3 Mtons CO₂e in 2007. Similarly, N₂O emissions have declined from 43.7 Mtons CO₂e to 30.1 Mtons CO₂e. Thus, not only are CH₄ and N₂O emissions a very insignificant portion of total GHG emissions from mobile sources, their contribution has declined significantly and is likely to continue to decline as additional mobile source regulations are implemented to control NO_x and

hydrocarbon levels to near-zero levels. Further evidence of the insignificant amount of CH₄ and N₂O emissions from mobile sources is provided by the following data obtained as part of the Advanced Collaborative Emissions Study (ACES). ACES is examining the substantially reduced emissions and health effects of new-technology heavy-duty diesel engines that comply with the EPA's 2007 heavy-duty on-highway emissions standards. Emissions test results from four 2007-compliant engines were provided by the Coordinating Research Council and the Southwest Research Institute. Those test results are provided in Tables 2 and 3 below and demonstrate that CH₄ and N₂O emissions account for approximately 1-2% of total GHG emissions, with CO₂ again being the most important and dominant GHG gas emitted [see DCN:EPA-HQ-OAR-2008-0508-0424.1 for Table 2 showing N₂O, CH₄, and CO₂ emissions data from four 2007 engines, FTP Cycle, g/hp-hr, from the ACES Program and Table 3 showing CO₂ Equivalent Emissions from four ACES engines, g/hp-hr].

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: David E. Brann

Commenter Affiliation: Electro-Motive Diesel, Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0361.1

Comment Excerpt Number: 3

Comment: EPA has historically allowed the use of carryover data in certification applications; that is, once a certification test is carried out, a manufacturer can continue to use the same data in support of applications for subsequent years, so long as no changes that would alter the emissions test results have been made. Some of such data is quite old; EMD, for instance, is still using some data taken in 1999 in certification applications. That taken to date of course does not include measurements for CH₄ and N₂O, though CO₂ measurements are included. While much of the carryover data used for locomotive applications will be made obsolete by the 40 CFR part 1033 locomotive emissions rule, and that for marine engines by the part 1042 marine engine emissions rule, there is still potential for carryover data to be used for freshly manufactured locomotives through 2011, for freshly manufactured marine compression ignition engines through 2013 or 2014, and indefinitely for remanufactured locomotive and marine engines. Much of these data have already been taken, in preparation for the effectivity of the locomotive and marine emissions rules. To require manufacturers to repeat the certification tests for locomotives and marine engines because the datasets lack numbers for CH₄ and N₂O emissions places a large, and in our view, unnecessary, given the discussion above, burden on manufacturers. Carryover data taken prior to the effective date of the mandatory greenhouse gas reporting requirement should be exempted from the reporting requirements for CH₄ and N₂O. A careful reading of the proposed rule text would make it appear that such is EPA's intent, but EPA should make it much more clear, by inserting, in simple declarative sentence form, a statement saying that carryover data taken before the effective date of the reporting requirement should be exempt from the requirement to report CH₄ and N₂O emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 12

Comment: Will GHGs be measured during confirmatory testing? If so, will the agencies results supersede the manufacturer's results like the regulated pollutants?

Response: Because the requirements finalized in this rule apply only to data reporting for informational purposes, not to compliance with emission standards, in any confirmatory testing EPA does that includes GHGs will be treated as supplemental to the data supplied by the manufacturer.

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 13

Comment: Subpart 86A, Section 7-23(n), Certification engine and vehicle labs are generally not set up to measure BSN₂O. Labs testing engines with negligible CH₄ would generally not be set up to measure BSCH₄. The measurement protocol for BSN₂O is just being proposed and there are many issues to address. 1065 does have protocols for BSNMHC, which includes most of the elements needed for BSCH₄, but there is an issue in the protocol on how to calculate BSCH₄ with nonmethane cutters. Once the protocols are finalized, labs will need time to implement those protocols. It will involve strategic analysis of measurement options relative to current systems; new material streams of N₂O gases; possible new bag sampling system just for N₂O; new NDIR analyzer for N₂O; test system hardware and software modifications; new verification checks; and data processing, analysis, reporting & storage modifications. Certification lab resources are now focused on upgrades to meet 1065 requirements for the regulated emissions. On-highway requires full compliance by July 2010. The nonroad 130 kW (174 hp) and higher categories have until MY 2011. Under the current economic conditions, these projects are being planned with little time margin for delivery of this capability. For all these reasons, there is insufficient lead time to meet the GHG reporting requirements for MY 2011 engines. At a minimum, the time to begin reporting BSN₂O and BSCH₄ should be two years after the measurement protocols are finalized in 1065 or MY 2012, whichever is later. Certification labs are generally set up to measure BSCO₂. There are no laboratory testing reasons that BSCO₂ reporting cannot meet the MY 2011 date. Rounding requirements should be in the same units as the applicable standards. For example, on-highway standards are in g/bhp-hr, so the rounding requirements for GHGs should be in g/bhp-hr instead of g/kW-hr.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpts 1 and 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 14

Comment: Subpart 1065C, section 257(a): We don't think it is a good idea to measure N₂O in dilute exhaust since the majority NDIRs (and FTIRs) on the market for emission measurements will have a detection limit of around 0.5 – 1.0 ppm at best. Bearing in mind you will have to measure and subtract the N₂O in background air (current ca. 0.3 - 0.4 ppm), the errors will be large. We suggest that the "N₂O data could be also collected by raw measurements based on sound engineering judgment". If EPA still want it only in dilute then there is really only GC

(with better det. limit) to choose.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 15

Comment: Subpart 1065C, section 257(a): We don't think it is good to restrict this measurement to batch sampling using a bag. As in other measurements (NO_x, CO, CO₂ etc) we have the choice to measure continuously, so why not allow continuous measurements for N₂O also? In fact this is a great way to avoid the artifact formation mentioned in § 1065.257 (c).

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 16

Comment: Subpart 1065C, section 257(a): EPA should allow other methods of measuring N₂O. Many labs are currently equipped with FTIR and/or Photo Acoustic Spectroscopy Analyzers. Allowing these methods for measuring N₂O may substantially reduce the burden for implementing reporting requirements for N₂O.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 17

Comment: Subpart 1065C, section 257(a): Not all labs have dilute bags. The current language requires dilute bag sampling. Is there any reason to not allow N₂O measurements using continuous analyzers from raw or dilute samples?

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 18

Comment: Subpart 1065C, section 257: The language is unclear on how to properly proportion

the N₂O sample bag based on different weighting factor of each phase. 1065 currently does not have provisions for this case and how to validate the proportional sampling. For example on-highway cold/soak/hot transient duty cycle has different weighting for cold and hot. The standard setting parts requires the GHG gases, including N₂O, to be reported in the same units as other species and be weighted like other species. See for example 86.007-23(n). The current 1065 calculations methods all rely on mass (or mass rate) of each regulated (and now the additional GHG) emissions species over each phase. The calculations in 1065 will require any negative mass of emissions over any test phase be zeroed before calculating the composite. This step would not apply for this option. So, to exercise this option, a lab would need to do the following: develop a separate N₂O bag sampling system, use good engineering judgment to vary the bag fill flow rate (or vary dilution) continuously and by phase; develop a proportional sampling verification check that is an alternative to 1065.545; and have special analysis software for the N₂O sample bag that was sampled over a different test interval than the other sample bags.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Myron Hafele

Commenter Affiliation: Kohler Co.

Document Control Number: EPA-HQ-OAR-2008-0508-0761.1

Comment Excerpt Number: 9

Comment: Kohler Co. requests that EPA revise the proposed rule to remove the requirement that manufacturers of engines and vehicles measure and report CO₂, CH₄ and N₂O emissions. The extensive and costly emissions testing program is not needed for EPA to complete a comprehensive and accurate national emission inventory. The mobile source reporting methodology should be changed to follow the fuel consumption approach that EPA has proposed for stationary source facilities. Although CO₂ is currently measured by Kohler Co., because we use the raw gas method to calculate mass emission rates of HC+NO_x and CO to comply with the spark-ignited engine emission regulations, CO₂ emissions are not reported to EPA. It is our opinion that there is no value in reporting CO₂ data to EPA since the relationship between CO₂ emissions and the gallons of fuel consumed is well established based on sound scientific knowledge. Additional data from engine manufacturers is not needed to complete a comprehensive and accurate national emission inventory. Currently the small engine industry does not measure CH₄ or N₂O emissions. To do so would require developing protocols/procedures, and purchasing the necessary instrumentation prior to implementation and testing. The cost and time required to be able to test and report these gases is not justified. The testing that has been conducted by Southwest Research Institute for the California Air Resources Board, which was referenced in the EMA comments, showed that the CH₄ emissions represent a small and insignificant portion of the GHG. Although N₂O was not measure in that study, the N₂O emission factors from small gasoline engines published by the US EPA as part of the Climate Leaders Guidance Document indicate that N₂O emissions are lower for gasoline engines than for diesel engines which was found to be approximately 1-2% of the total GHG emissions in the Advanced Collaborative Emission Study conducted by Southwest Research Institute. Low levels of CH₄ and N₂O from small spark-ignited engines were also reported in a Canadian study that was done to support their GHG and Criteria Air Contaminate modeling (ref. SAE paper 2006-32-0093). They reported that the emissions of CH₄ and N₂O were "very low, almost not measureable".

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 31

Comment: Subpart 1065D, section 357(d)(6): Inconsistent instructions in the procedure. For the CO₂ part of the interference test, the language mentions that (d)(2)-(5) is to be repeated but without humidifying the gas. There was no mention of humidifying the CO span gas. See other comments on H₂O interference. This should be deleted.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 37

Comment: Subpart 1065H, section 750(a): Balance gas issue. The section requires “N₂O, balance purified N₂” Change this to balance purified N₂ or Zero Air. The Photo Acoustic Analyzer works best with zero air as the balance gas.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 38

Comment: Subpart 1065H, section 750(a)(1)(ii): Do the gas suppliers have the capability to measure and achieve the new N₂O contamination level?

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 39

Comment: Subpart 1065H, section 750(a)(3): N₂O gases need to be added. Considerations need to be made for availability of N₂O span gases with respect to diluent, level of accuracy, and stability. Also, consideration needs to be made for multi-blend gases with N₂O for response verifications per 1065.309, spanning FTIR analyzers, and spanning multiple single component analyzers. Also, the section requires the use of gases within 1% of NIST gases. To our knowledge, there are no such standards available “off the shelf” from vendors or NIST. NIST has in the past analyzed special batches of N₂O gas for industry, but these were one-time custom

bottles.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Sucheck
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 40

Comment: Subpart 1065H, section 750(a)(3): N₂O gases need to be added. Considerations need to be made for availability of N₂O span gases with respect to diluent, level of accuracy, and stability. Also, consideration needs to be made for multi-blend gases with N₂O for response verifications per 1065.309, spanning FTIR analyzers, and spanning multiple single component analyzers. Also, the section requires the use of gases within 1% of NIST gases. To our knowledge, there are no such standards available “off the shelf” from vendors or NIST. NIST has in the past analyzed special batches of N₂O gas for industry, but these were one-time custom bottles.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Sucheck
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 41

Comment: Subpart 1065H, section 750(c) and (d): If there are any special handling issues with N₂O gas, such as the hang-up issues seen with NH₃, they should be included in these paragraphs.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Sucheck
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 30

Comment: Subpart 1065D, section 357(d)(5) and (6): Scaling interference results. The language says: (5) Scale the CO interference by multiplying this mean value (from paragraph (d)(7) of this section) by the ratio of expected CO to span gas CO concentration. The scaling should be based on the CO interference from (d)(5), not the combined scaled interference in (d)(7). Mathematically this language causes a circular reference. There is a similar issue with CO₂ interference. If H₂O interference is also added, it would apply to it too.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Sucheck

Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 20

Comment: 1065C, 257(b): Photo Acoustic analyzers should be allowed as an option for the measurement of N₂O. This technology is in use today at some manufacturer's emission test laboratories, primarily for the purposes of measuring ethanol, but is also used to measure N₂O.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 32

Comment: Subpart 1065D, section 357(e)(1): Inconsistent language on whether H₂O interference is required. This paragraph alludes to a H₂O interference requirement, but the procedure does not include H₂O interference.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 19

Comment: Subpart 1065C, section 257(b) : Poor performance of NDIRs (interferences). Consider FTIR and GC methods as alternatives. Perhaps N₂O measurements could also be made by other techniques (e.g. FTIR, GC) which may offer superior performance to NDIR. Method choice should be based on sound engineering judgement".

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 25

Comment: Subpart 1065D, section 357(a): Photo Acoustic Analyzer: Per our comment above, use of Photo Acoustic Analyzers should be allowed. In that case, the title of this section needs to be changed to include the Photo Acoustic Analyzer for the N₂O analysis.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: David E. Brann
Commenter Affiliation: Electro-Motive Diesel, Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0361.1

Comment Excerpt Number: 5

Comment: Required reporting quantities should be reflected in the certification application formats required by EPA through the FileMaker Pro and VERIFY systems. For example, though the part 1033 locomotive rule is more than a year old, the VERIFY template has not yet been updated to reflect the required reporting of CO₂ emissions from locomotives and locomotive engines to be certified under that rule. This situation requires the submission of CO₂ data separately from the other test data; because of the limited size of the available text fields, the data must be submitted in a separate document with each application, making additional work for the submitter and, we should surmise, for the CISD person evaluating the submissions. If, contrary to our suggestion, EPA implements the requirement to report methane and nitrous oxide emissions, the appropriate application templates should be expeditiously updated to reflect that requirement.

Response: We intend to update the Verify system this year to collect CO₂ emissions certification data for locomotives and locomotive engines. The required reporting for CH₄ and N₂O data will be handled in subsequent planned system releases. Please visit the Verify website at <http://www.epa.gov/otaq/verify/index.htm> for system information and updates.

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 35

Comment: Subpart 1065F, section 550(d): No GHG (N₂O, CH₄, CO₂) standards for drift check. Since these are not regulated pollutants, the drift check does not apply. To control the quality of these measurements, consider establishing default BS values of these species for use in the drift check. The same values could be used for interference verifications. Requiring the drift check without default BS limits will cause failures whenever BS levels are very low. While BSCO₂ will never be very low for hydrocarbon fuels, BSCH₄ and BSN₂O are expected to be very low for some fuels and engines covered by 1065. With no change in the drift check for GHGs, labs will tend to select a single range high enough to cover their maximum expected level for the range of engines and duty cycles that they test. This may not meet EPA's need to control the accuracy of these values for the majority of engines with lower levels of N₂O and CH₄.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 7

Comment: Engine and vehicle manufacturers will incur significant additional costs if required to implement sampling and testing programs for CH₄ and N₂O as part of the EPA certification process. There will be initial capital costs to purchase and install the sampling and analytical equipment needed to sample CH₄ and N₂O emissions from each engine family and vehicle. In addition, there will be annual recurring costs associated with the actual emissions testing,

analysis and reporting. Currently, manufacturers must determine CO₂ emissions from engines and vehicles as part of the emissions testing procedure in order to calculate work completed and fuel efficiency measures. In cases where EPA regulations require information on levels of non-methane hydrocarbons, some - but not all - engine manufacturers may already be collecting information on CH₄ levels in exhaust emissions, although not necessarily to the required accuracy. No manufacturers currently measure or test for N₂O levels. Consequently, all manufacturers will incur additional costs associated with the measurement of CH₄ and N₂O emissions. For engine manufacturers that do not have CH₄ measurement capabilities, costs to upgrade the emissions sampling systems will be required. Depending on the current capabilities and age of the current system, the initial capital cost to improve the emissions sampling systems to measure CH₄ can range from \$6,000 if only a new methane cutter needs to be added, to over \$300,000 for a replacement bench. A replacement bench may be required whenever existing systems are no longer supported by the original supplier. It is estimated that the addition of an NDIR analyzer to obtain data on N₂O emissions will cost on the order of \$50,000 - \$70,000 per test cell. That cost may double if an engine or vehicle manufacturer needs to add a mini-bag diluter system in order to comply with the proposed testing requirements. In addition, it is estimated that each N₂O analysis will add approximately \$5,000 per engine family to the existing costs of certifying an engine or vehicle. Thus, manufacturers with a large number of engine families will incur significant costs on a yearly basis to obtain and report the GHG emissions data at issue in the GHG Reporting Rule. While the costs to implement the mobile source GHG reporting rule will be significant, the larger issue is that there is little additional value or benefit from the CH₄ and N₂O data that will be collected. First, those data will not improve GHG inventories since the national inventory of GHG emissions is largely dependent on the configuration and operation of the in-use vehicles, not CH₄ and N₂O emission levels from new engines. Secondly, emissions factors based on the quality and quantity of fuel consumed already exist and provide more meaningful GHG emissions data. Third, the data being collected will only be valid for identifying GHG emissions factors for newly-manufactured engines and vehicles, and thus will not be useful in estimating GHG emissions for the existing (or historic) mobile source fleet. Thus, the proposed testing and measurement program will not provide useful data related to mobile source inventory numbers, since new engines comprise only a small percentage of the in-use engine and vehicle fleet. In other words, the proposed information to be collected through the GHG reporting program is ill-suited to meet EPA's stated objectives. Based on the significant costs to engine manufacturers to implement CH₄ and N₂O testing, together with the questionable utility of the data collected, implementing a comprehensive mobile sources testing program as required in the GHG Reporting Rule is not cost-effective and should not be required. In the preamble to the proposed rule, EPA evaluated whether requiring all stationary sources to implement a GHG testing program should be mandated and concluded that such a program was not cost-effective. The same conclusions apply to the proposed mobile source GHG testing program. There is little value in obtaining GHG emissions data for each mobile source engine family or vehicle, and the effort and cost to obtain those data cannot be justified.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: David A. Gardner

Commenter Affiliation: Briggs and Stratton Corporation

Document Control Number: EPA-HQ-OAR-2008-0508-0662.1

Comment Excerpt Number: 1

Comment: CO₂ emissions are the predominant form of GHG emissions from mobile sources,

with CH₄ and N₂O emissions comprising approximately 1% of total GHG emissions. The amount of GHG emissions from mobile sources can be estimated using standard factors based on the characteristics of the fuel burned and the combustion process of an engine. There is no need for EPA to obtain GHG emissions data from all mobile source engine families and vehicles in order to determine GHG inventory levels or for GHG source apportionment purposes. Engine, vehicle, and equipment CO₂ emissions levels and factors are available and well documented. CH₄ and N₂O emissions are minimally emitted from mobile sources and contribute de minimis amounts of GHG emissions. There is no need to require engine and vehicle manufacturers to complete implement additional measurement and testing programs for these gases. Engine manufacturers cannot implement a testing program for GHG emission -- especially for CH₄ and N₂O -- in time to comply with the 2011 model year reporting date. Many small engine manufacturers already have to implement changes to their emission test programs to comply with 40 CFR Part 1025, but not until 2013. Implementing the required analyzer changes by 2011 is not reasonable and would be very expensive for no perceivable benefit. There is no compelling reason to measure N₂O and CH₄ emissions at all. However, if EPA insists on measuring these pollutants the method for testing and reporting of N₂O and CH₄ emissions is not adequate and must be revised before any measurement program is implemented. Any GHG emissions testing and reporting program should exclude carryover engine families. EPA should ensure that whatever methodology it decides to use to determine the GHG emissions from engines, the methodology should be the single, agreed upon method used for GHG reporting by the regulated industry. The industry should not have to report GHG emissions using inconsistent test methods and procedures for local jurisdictions (e.g., California) as compared to the method that EPA approves. This will help reduce the costs and test effort required for any GHG measurements.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpts 1 and 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 3

Comment: The requirement to collect very detailed mobile source GHG emission rates through a testing protocol is not comparable in terms of effort and accuracy to the GHG estimation technique that is proposed for stationary sources. For stationary sources that combust fuel, EPA proposes to require that only facilities with existing continuous emissions monitoring systems ("CEMS") units monitor for actual GHG emissions, and in many cases those facilities are power plants that already must report aggregate CO₂ emissions (Tier 4 monitoring). For all other stationary sources that combust fossil fuels, EPA has proposed a calculation method that basically requires the owner to keep track of the fuel consumed and then estimate GHG emissions using standard emissions factors and calculations (Tier 1, 2, and 3 monitoring). The rationale for not requiring all stationary sources to test and monitor actual GHG emissions was explained by the Agency as follows: "EPA considered several alternative CO₂ emission calculation methods of varying stringency for stationary combustion units. The most stringent method would have required all combustion units at affected facilities to use 40 CFR Part 75 monitoring methodologies. However, this option was not pursued because it would have placed an undue cost burden, particularly on smaller entities. For homogeneous fuels, this additional cost burden would probably not lead to significant increases in accuracy compared to Tiers 1-3." (FR 74: 16484) Further, with regard to the monitoring and reporting of CH₄ and N₂O emissions from stationary combustion sources, the GHG Reporting Rule indicates that simplified emissions

calculations methods also will be allowed that use standardized CH₄ and N₂O emissions factors. Again, the rationale for not requiring stationary combustion sources to complete actual testing and monitoring for CH₄ and N₂O is that such methods are too costly and do not materially increase the accuracy of the emissions data. “EPA considered requiring periodic stack testing to derive site-specific emissions factors for CH₄ and N₂O . . . However, it was decided that this approach was too costly for the small improvements in data quality that it might achieve. . . . The proposed approach, i.e., using fuel-specific default emission factors to calculate CH₄ and N₂O emissions, is in accordance with methods used in other programs and provides data of sufficient accuracy.” (FR 74: 16485) Under the proposed rule, EPA is requiring engine manufacturers to add expensive monitoring and testing, but is only requiring stationary fuel combustion sources to estimate GHG emissions based on the premise that it is not cost-effective for those stationary sources to complete actual measurements. But if large stationary facilities that emit more GHG emissions do not have to measure GHG emissions due to cost issues and lack of improved accuracy, it follows that the same rationale should apply with equal if not greater force to engine and vehicle manufacturers. Accordingly, EMA believes that the rationale that was applied to stationary combustion sources also should be applied to mobile sources. There is no technical or policy justification to require mobile sources to implement testing and monitoring programs in order to collect GHG emissions information.

Response: While we do not agree that using default emission estimates is appropriate or necessary for this rule, we will allow manufacturers to avoid testing if they supply appropriate alternative test data and analysis that allows us to estimate the emission rates of the engines. See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 42

Comment: Subpart 1065K, section 1005(b): N₂O needs to be added to the list of symbols for species.

Response: EPA is making this change.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 2

Comment: Rather than require extensive and all-inclusive emission testing of engines, vehicles, and equipment, EMA believes that the improvements in GHG inventory numbers can be better achieved by improving information and data related to mobile source inventories, activity patterns, and modeling. Uncertainty today does not come from engine or vehicle emissions factors, but in the relatively poor information on real-world activity patterns.

Response: While we have concluded that information based on engine testing is important to achieve this rule’s purposes, we will allow manufacturers to avoid testing of individual engine

families if they supply appropriate alternative test data and analysis that allows us to estimate the emission rates of the engines. See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Jack Gehring et al.

Commenter Affiliation: Caterpillar Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0499.1

Comment Excerpt Number: 4

Comment: EPA's schedule for publication and implementation of the final Reporting Rule (as proposed, in late 2009 or early 2010) is impractical and would foment conflicts with other EPA regulatory programs. Caterpillar and other engine manufacturers have estimated that acquiring, installing, setting up, and validating accuracy for required test equipment in certification engine test cells will take a minimum of nine (9) months, and likely closer to twelve (12) months, once the Reporting Rule's requirements are finalized. Among the practical lead-time problems is the availability of such sophisticated testing equipment from a limited supplier base. In addition, Caterpillar and others in the engine manufacturing industry do not normally stock N₂O analytical gases, and are concerned that a 1% NIST traceable span gas may not be available, period. If available, at least a one-year lead-time for such a span gas is likely. [Footnote: Note that, in parallel with industry's efforts to acquire proper testing equipment and NIST-compliant parameters, EPA's Office of Transportation and Air Quality (OTAQ) would also need to revise the mobile source certification templates for certification test data capture. The agency's own necessary process could add lead-time and result in inaccuracies in measurement and reporting.] Thus, it is expected that there will be significant lead-time for getting this in place at NIST.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Jack Gehring et al.

Commenter Affiliation: Caterpillar Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0499.1

Comment Excerpt Number: 6

Comment: Caterpillar would have to be able to measure N₂O and CH₄ in late 2010—beyond the last feasible date for certification testing of model year 2011 engines. As EPA is well aware, most if not all of Tier 4 Interim certification tests will have already been performed before the fourth quarter of 2010. Very significant time, attention and resources are being devoted to implement Tier 4 Interim and Tier 4 Final non-road emission standards. After Tier 4 Interim products have been developed and tested, Tier 4 Final products must be tested as quickly as possible. The probable timing of this proposed rule will most likely coincide with the Tier 4 Final implementation phase, well after all certification testing is complete. At the certification testing stage, then, Caterpillar would effectively be forced to choose between certifying its Tier 4 engines and compliance with the Reporting Rule. No regulated entity should be put in such a position. Caterpillar therefore requests that EPA reconsider its implementation schedule for the Reporting Rule; the earliest practical reporting date for N₂O and CH₄ (if EPA ultimately decides to mandate such reporting at all) would be engine model year 2012.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 27

Comment: Subpart 1065D, section 357(c): What is the N₂O standard? The requirement to have a maximum interference of CO and CO₂ gases of no more than $\pm 2\%$ (recommend $\pm 1\%$) of the “flow weighted standard” for N₂O cannot be determined because there is no standard for N₂O, therefore cannot implement this requirement. Also since this is a new measurement and interference requirement, will have to establish what “%” interference level is achievable with this instrumentation. A major concern in establishing this interference criterion is what precision is practical and achievable at such low level N₂O concentrations. For this CO and CO₂ interference check, recommend industry and government emissions measurement experts work together to establish practical interference % tolerances and determine what criteria to compare it to since there is no “standard” for NO₂. One possibility to replace the “flow weighted standard”, with a criteria based on the maximum CO₂ concentration expected during the test. Since CO₂ is another gas of interest in this regulation, and the N₂O concentration is a very small percentage of the CO₂ concentration (perhaps 0.01% of the CO₂ concentration), using CO₂ as a metric for comparison would make sense. Then taking “x” percent of the CO₂, and dividing this by the N₂O Global Warming Potential factor of 310 from Part §98.8 Table A-1, could achieve the purpose of this section. (Again), will have to be analyzed for what is practical. This needs to be specified as early as possible so we can evaluate our NDIRs to see if they can pass the interference test.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 43

Comment: Subpart 1065K, section 1005(f)(2): To calculate mass of N₂O, the molar mass is required. The table in this paragraph needs to be updated with the molar mass of N₂O. Adding the molar masses of N₂ and O in the existing gives a value of 44.0128 g/mol.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 33

Comment: Subpart 1065D, section 357(e)(1): No BSN₂O standard. Again there is no standard to judge ability to demonstrate compliance. To retain this exemption, an alternate BSN₂O value must be provided or an alternate regulated species, like NMHC, must be allowed.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 22

Comment: Subpart 1065C, section 257(c): N₂O sample conditioning. The language calls for specific sample conditioning with specific sorbents amount regardless of SO₂ and H₂O levels or sample flow rates. This is one of several practical issues with sorbents. Another practical issue with sorbents is when to replenish the sorbent. If the time the sample is aged before removing the SO₂ and H₂O is a critical factor, then the transport time of the N₂O sample train should be specified. The opening sentence says NO_x can react to form N₂O, but there is no provision for removing NO_x. Is the N₂O formation reaction arrested with just the removal of SO₂ and H₂O? Use of sorbents (chemicals) to remove H₂O is prohibited by 1065.145(d)(2). This conflict needs to be resolved. Like osmotic membranes, would the use of sorbents to remove H₂O also require dewpoint and pressure measurements downstream of the dryer? These are used in 1065.659 for the removed water correction. 1065.145(d) does not require a specific level of performance of sample dryers because of the 1065.659 removed water correction. Is an H₂O limit needed on the N₂O sample train dryer outlet to arrest the N₂O formation reactions? Removal of SO₂ may need a correction like the removed water correction. This is likely to be negligible for most fuels, but the 4.5% by mass sulfur content of residual fuels may need a correction. Having a common bag fill sample system for N₂O and all the other species (that can be read from bags) may save cost. Options for this should be explored. For example, would a shorter time between the end of bag filling and bag reading reduce this error to an acceptable level? Would the N₂O formation reactions be reduced to an acceptable level if the bag were at a controlled temperature, say, below room temperature? This might require just sample dryers (to prevent condensation). Since this is described as a positive artifact, could manufacturers choose to not use the sample conditioning and report the higher results? Sample dryers per 1065.145(d)(2) should be allowed (or required) instead of sorbents. Bag fill sampling systems typically only have PM filters for sample conditioning (i.e. they are wet). Some bag read sampling systems use a sample dryer before some analyzers (i.e. bag reads can be wet or dry). Drying the sample prior to bag fill as described in this paragraph is currently allowed in 1065.145(d)(2)(i) & (ii), but the amount of water in the dry bag must be determined for the removed water correction in 1065.659. Direct humidity measurement is allowed, but 1065 is not clear if a prediction would be allowed. For example, the water content in the bag could be predicted from a continuous chemical balance prediction of the sample H₂O content, the bag fill wet flow rate, and the thermal chiller sample dryer performance. If the sample H₂O water content is always higher then the sample dryer outlet, the bag water content be predicted from just the bag fill wet flow rate and the dryer outlet water content. If a sample dryer on the bag read sample train is used that has a lower outlet water content than the bag sample dryer outlet H₂O content, then the removed water correction is based on the bag read sample dryer outlet water content. Since the transport time between sample probe and the N₂O bag sample conditioners (SO₂ and H₂O removal) is on the same order as the transport time between sample probe and a continuous analyzer, the requirement to remove SO₂ & H₂O to avoid N₂O formation can be dropped for continuous N₂O analyzers. Effectively, the time for N₂O to form is roughly the same. Dropping SO₂ and H₂O sample conditioning requirements would avoid all the practical issues of sorbents. Some sample conditioning may be needed for the N₂O analyzer, even for continuous analyzers, to pass the required interference

verification in 1065.357. For example, H₂O is a common interference gas in IR measurements. Sample dryers may be needed for both bag and continuous N₂O sampling. If N₂O can be lost in sample dryers (like NO₂ is in chillers), then a sample dryer N₂O penetration test may be necessary like 1065.376.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 23

Comment: Subpart 1065D, 357(a): Is H₂O an interference gas for an N₂O NDIR? If so, the procedure should be updated. There should be an option to run the H₂O interference separately similar to the procedure for CO and CO₂ and then mathematically add all three scaled interferences. There should also be an option to run a combined H₂O, CO and CO₂ interference where their concentrations are at or above the maximum expected levels during emissions testing with no scaling of the resultant combined interference. Then the title and text should be changed to "H₂O, CO, and CO₂ Interference"

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 24

Comment: Subpart 1065D, section 357(a): The first sentence should refer to N₂O analyzer instead of CO analyzer. "If you measure CO" should be "If you measure N₂O" There are also typos in multiple locations throughout the text. An inverter "A" symbol meaning to be used for +/-.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 26

Comment: Subpart 1065D, section 357(b): CO and CO₂ Interference Tests Delete the words "simultaneously conduct" regarding the Co and CO₂ interference tests. Those tests cannot be conducted simultaneously and is in contrast to the specific instructions in section 1065.357 (d).

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 28

Comment: Subpart 1065D, section 357(d)(2): Possible error in text. Maybe the text should say the gas is humidified in some way (see text at 357 (a)).

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 29

Comment: Subpart 1065D, section 357(c) and (d)(8): Tolerance for CO and CO₂ interference. There is no N₂O standard to scale the interference. N₂O is similar to CO₂ in that there are no applicable standards. Currently, the CO₂ NDIR interference verification in 1065.350 is 0.0 ± 0.4 mmol/mol. If N₂O is 310 times more potent as a GHG compared to CO₂, then an equivalent starting point is 0.0 ± 1.4 micromol/mol. This is based on the CO₂ interference limit adjusted for permissible round down to 450 micromol/mol; then dividing by 310; giving an equivalent N₂O interference limit of 1.452 micromol/mol, which can be expressed as 1.4 micromol/mol to give an equivalent stringency. This tolerance must be verified against the capability of available NDIR analyzers. Other methods for stating the allowed tolerance should be considered. As N₂O concentrations increase due to level of dilution and duty cycle, then the allowed tolerance should increase. See comments on establishing default BSGHG values, including a BSN₂O value, for the drift check in 1065.550. The interference tolerance for the CO₂ NDIR could be stated with the same method.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 36

Comment: Subpart 1065F, section 550(d): No CH₄ concentration equations. CH₄ can be measured with either a GC or a FID with a nonmethane cutter (NMC). For the case of FID, several configurations are allowed. 1065.660 gives equations for calculating NMHC mole fraction based on the as measured THC and CH₄ concentrations. Similar equations need to be developed for correcting the as measured CH₄ concentration from a FID with a NMC. The NMHC concentration equations in 1065.660 are all derived from the equation [see DCN:EPA-HQ-OAR-2008-0508-0424.1 for equations]. The response factor and penetration fraction values for the CH₄ concentration correction are the same as the values used for the NMHC concentration.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Timothy A. French and Joseph L. Suchecki
Commenter Affiliation: Engine Manufacturers Association (EMA)
Document Control Number: EPA-HQ-OAR-2008-0508-0424.1
Comment Excerpt Number: 34

Comment: Subpart 1065D, section 357(e)(2): Delete this entire section because there are no standards, hence it says that you do not have to do nay of the interference verification checks above, which is not true. Clearly to do this N₂O measurement properly, one must do some interference checks and corrections.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

5. HIGHWAY LIGHT-DUTY VEHICLES

Commenter Name: Filipa Rio
Commenter Affiliation: Alliance of Automobile Manufacturers (Alliance)
Document Control Number: EPA-HQ-OAR-2008-0508-0630.1
Comment Excerpt Number: 6

Comment: In order to avoid the unnecessary burden of building and testing new emission or fuel economy data vehicles solely for the purposes of generating GHG data, it should be made clear that a manufacturer would not be required to report 002, CH₄ or N₂O data when carrying over data from a previous model year. EPA regulations currently allow manufacturers to "carry over" test data from one model year to another to meet emission certification and fuel economy requirements. Because GHG emission data may not be available for tests that were performed in prior model years, regulatory provisions need to be put in place to assure that manufacturers retain the ability to carryover data without having to report GHG emissions. For example, if GHG reporting were to begin in MY2011 and the manufacturer had planned to carry over a MY2010 data vehicle for which GHG data did not exist, the manufacturer should not be required to retest that vehicle for 2011 solely to obtain GHG reporting data. GHG data should only be required when a new emission or fuel economy test is required.

Response: EPA is not finalizing any of the proposed GHG reporting requirements for light duty vehicles. Instead, we expect to address light duty vehicle GHG reporting as a part of an EPA proposal to set GHG emissions standards for light-duty motor vehicles.

Commenter Name: See Table 1
Commenter Affiliation:
Document Control Number: EPA-HQ-OAR-2008-0508-0635
Comment Excerpt Number: 60

Comment: Although CO₂ emissions reporting requirements exist for many vehicles these requirements need to be expanded to cover the full range of applicable greenhouse gases emitted by mobile sources. We therefore support EPA's expansion of automotive reporting requirements beyond CO₂ to include air conditioning emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: See Table 1

Commenter Affiliation:

Document Control Number: EPA-HQ-OAR-2008-0508-0635

Comment Excerpt Number: 62

Comment: With regard to refrigerant emissions from mobile sources, although some existing vehicle testing procedures (SC03) currently involve emissions related to air conditioning (A/C), A/C emissions have not been assessed separately. Thus, the proposed A/C-related testing will be an important means of isolating the GHG effect of A/C, separate from the GHG impacts of the rest of the vehicle, and will significantly enhance understanding of the role that A/C plays in overall emissions. Nevertheless, it may not be necessary that vehicle manufacturers installing certified engines (manufacturers not currently obligated to test their vehicles), should incur a new requirement to test their vehicles with installed A/C units.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Ward Atkinson

Commenter Affiliation: Sun Test Engineering

Document Control Number: EPA-HQ-OAR-2008-0508-0614.1

Comment Excerpt Number: 1

Comment: I strongly feel that the proposal for (EPA-HQ-OAR-2008-0508) EPA Mandatory Reporting of Greenhouse Gases is not in the best global interest for the environment or its economic impact it will have on consumers. The proposed EPA test proposals are too variable and unreliable resulting in costly and questionable measurable benefits for the environment. SAE International Cooperative Research Programs, supported by regulatory and industry participation, have provided direction for cost effective and environmental benefits that have been adapted in current MAC systems. The US EPA should consider a cooperative development effort to establish a similar Mobile Air Conditioning System Emission Chart for A/C-related CO₂ emissions and A/C efficiency improvements as developed for the J2727 MAC System Refrigerant Emissions. Development of this type of MAC system evaluation will result in a more global cost effective and environmental benefit rather than a unreliable vehicle test procedure as proposed by this EPA Mandatory Reporting of Greenhouse Gases regulation.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: See Table 2

Commenter Affiliation:

Document Control Number: EPA-HQ-OAR-2008-0508-0476.1

Comment Excerpt Number: 2

Comment: Similarly, for indirect AC emissions, auto manufacturers do not currently measure such emissions rates. Therefore, AIAM recommends that this requirement also be postponed. AIAM member companies have an additional concern with this element of the proposal; we do

not believe the proposed idle test procedure is a reliable, repeatable, robust method to measure indirect AC emissions and, in particular, is ill-suited to provide the ability to discern the emissions reduction benefits of advanced AC system enhancements.[FOOTNOTE 2: For example, the proposal requires a 10-minute idle to measure carbon dioxide emissions. For manual AC systems, the proposed test protocol requires the setting maximum fan speed in ventilation mode. Based on current testing, manual AC systems tend to overcool the cabin in comparison to automatic AC systems. In the proposed protocol the temperature setting for automatic AC systems is 20°C (note this is 5°C lower than the test lab) while the manual AC system cools to 18°C. Thus, the proposed protocol will not provide a level playing field for the two types of AC systems. AIAM is also concerned that the proposed test protocol would require significant, costly, and time-consuming modifications to existing testing facilities because the proposed protocol requires direct measurement while current testing facilities are best suited for batch measurement. Having a robust test procedure is particularly important moving forward, since auto manufacturers and suppliers are making significant investments in research and development on improved technologies for vehicle AC systems, including more efficient compressors, reduced refrigerant leakage, and alternative refrigerants with lower global warming potential. Therefore, it is important for EPA to take the time needed to work with industry, equipment vendors, and other stakeholders to develop the proper test protocol for indirect AC emissions. For direct AC emissions, again EPA is proposing changes to established protocols, in this case proposed changes to the Society of Automotive Engineers (SAE) J2727 protocol for estimating AC refrigerant leakage. AIAM believes it is critical that there is one uniform reference method to measure indirect AC emissions. The SAE Interior Climate Control Committee has been engaged in the improved mobile air conditioning (IMAC) program for several years. The SAE ICC Committee has not only developed J2727 but other important protocols, such as the J2766 standard method for life cycle analysis for mobile AC operation. The EPA proposal for characterizing leakage emissions later in vehicle life cannot be established at this time, since the innovation in mobile AC system technology has resulted in many significant system changes in recent years, and this trend is continuing due to pressure for alternative refrigerants, higher efficiency, and lower leakage. With reduced system refrigerant charge it has become very important to ensure leak-tightness to maintain customer satisfaction. As EPA has done many times in the past, it is essential that the agency work closely and collaboratively with the SAE committee in developing any new procedures or protocols for both the indirect and direct AC emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Filipa Rio

Commenter Affiliation: Alliance of Automobile Manufacturers (Alliance)

Document Control Number: EPA-HQ-OAR-2008-0508-0630.1

Comment Excerpt Number: 12

Comment: There has been considerable activity to develop new refrigerants with lower GWPs. EPA should not require leak rate reporting for vehicles that use refrigerants with GWPs below 150, since the environmental impact of these refrigerants at any realistic leak rate would be minimal. In fact, ARB's Manufacturers Advisory Correspondence ("MAC") #2009-01, grants manufacturers maximum A/C-direct emission reduction credit for A/C systems that use a refrigerant with a GWP of <150 times that of CO₂ regardless of whether the NC system is a "low-leak" system or not because the GWP from refrigerant leakage is considerably less than other annual greenhouse gas emissions. In view of the outlook for adoption of low GWP

refrigerants, it is questionable whether an extensive effort should be devoted to studying long term in-use R134a leakage increases, such as to develop deterioration factors to apply to SAE J2727 calculations. A research program to develop these factors would take significant time, and the results would have little meaning or value by the time they are available. As an alternative, the Alliance suggests to EPA that a GWP weighted approach would be reasonable. For refrigerants with GWPs above 150, SAE J2727 would be used. For those refrigerants with GWPs below 150, an alternative estimated value should be used.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Filipa Rio

Commenter Affiliation: Alliance of Automobile Manufacturers (Alliance)

Document Control Number: EPA-HQ-OAR-2008-0508-0630.1

Comment Excerpt Number: 11

Comment: EPA has stated an interest in expanding the system leakage scores by placing greater emphasis on characterizing leakage emissions to account for system aging effects that would occur later in the vehicle's life. There is no data on which to base any factors to adjust SAE J2727 calculations for in-use deterioration over time. A new research program to gather this data would be needed, and this would take some time to conduct. Given the outlook for introducing a new, low GWP refrigerant, the development of a SAE J2727 aging factor need not be a high priority. The Alliance supports EPA's proposal to utilize the SAE J2727 standard for developing a set of component and leakage scores as a means for representing the A/C refrigerant leakage from vehicle system designs. It is important to note that the ARB accepts J2727 without any additional changes.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Filipa Rio

Commenter Affiliation: Alliance of Automobile Manufacturers (Alliance)

Document Control Number: EPA-HQ-OAR-2008-0508-0630.1

Comment Excerpt Number: 10

Comment: The Alliance urges EPA to work with the ARB and the auto industry to develop one national method for determining direct GHG emissions from mobile A/Cs. The most efficient and consistent way of approaching direct GHG emissions would be for EPA to adopt leakage requirements exactly the same as J2727. This requirement is currently in place in Minnesota and is also used for ARB's Environmental Performance Label (ARB EPL, Reference: MAC #2009-01). It is an accepted standard which has been correlated with many tests. The SAE J2727 standard is a design-based calculation that was developed based on its correlation with vehicle fleet tests and bench test data in a mini-shed. Measured new vehicle leak rates in this process were generally quite low. The results based on this design-based standard have been correlated well to mini-shed tests and vehicle fleet tests conducted in Europe and Japan. The SAE Improved Mobile Air Conditioning ("IMAC") program showed good correlation between SAE J2727 and SAE J2763 mini-shed test. This SAE calculation includes conservative adjustments for assumed error rates in assembly. Thus, SAE J2727 conservatively estimates leakage rates for new vehicles. Minnesota has already adopted SAE J2727 for reporting leakage for all vehicles sold in that state, and J2727 is currently in use for the ARB's Environmental Performance Label. EPA

reporting rules should allow manufacturers to adjust the conservative factors that have been incorporated into SAE J2727 if they can provide data supporting a lower number based on that manufacturer's demonstrated performance. (Since this is already provided for by the SAE J2727 standard, EPA should simply follow the SAE practice.) Note that the latest SAE J2727 formulas should be referenced, and not the incorrect formulas printed in the proposed rule which appeared with typographical errors [74 FR 16729].

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Filipa Rio

Commenter Affiliation: Alliance of Automobile Manufacturers (Alliance)

Document Control Number: EPA-HQ-OAR-2008-0508-0630.1

Comment Excerpt Number: 9

Comment: EPA proposes that test data be reported for the same vehicles used in fuel economy tests (preamble, 74 FR 16588). Fuel economy tests must be performed on far more test vehicles than are relevant to cover all representative air conditioner designs. Fuel economy test vehicles are chosen based on design features relevant to fuel economy such as engine, transmission, axle ratio and tires. In contrast, basic air conditioner designs are generally consistent within a vehicle platform, with some variation for vehicle platforms that offer optional dual evaporator systems or hybrid models with electric compressors. Thus, air conditioners can be adequately covered based on fewer tracking vehicles than fuel economy. In the regulatory text, a list of variations is provided that would require separate SAE J2727 calculations. Examples of variations are the number of fittings; type of hose materials; hose and pipe length variations of over 10%; and refrigerant mass variations of over 10%. While variations of this type would in most cases produce very small changes in SAE J2727 scores, providing the data EPA proposes to collect would require automakers to produce a number of tracking vehicles that far exceeds the number necessary for a good understanding of leakage behavior. A better list would focus on the sources of major variation in leakage (i.e., compressor shaft seal). We would propose that a single representative tracking configuration be chosen for each vehicle platform, unless an optional dual evaporator system or hybrid model is also offered on a platform, in which case a representative configuration for the dual evaporator and/or the hybrid vehicle would also be reported. This would be the same format as reporting used for reporting J2727 scores to the state of Minnesota.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Filipa Rio

Commenter Affiliation: Alliance of Automobile Manufacturers (Alliance)

Document Control Number: EPA-HQ-OAR-2008-0508-0630.1

Comment Excerpt Number: 13

Comment: EPA discusses four approaches for assessing air conditioner energy consumption: (1) A bench test procedure that simulates actual representative drive patterns, such as used by the IMAC program; (2) An idle vehicle test; (3) The SCO3 vehicle test cycle; and (4) A design-based standard similar to SAE J2727 for refrigerant leakage. The SCO3 and the idle test are not representative of real-world conditions, since they are not performed over a range of temperatures and air conditioner operating conditions. Some efficiency technologies work well at

low loads and others at high loads, and a good test would need to cover a variety of conditions as they would be encountered in the real world. The SCO3 cycle is not a good, representative test insofar as it only includes high loads. Similarly, EPA should not adopt an idle test. The proposed idle test would also be unrepresentative of actual driving conditions, and would tend to overestimate air conditioner energy consumption. Idle speeds are reduced to absolute minimum levels whenever possible to improve fuel economy ratings, but may be increased in actual driving conditions as accessory loads are added, which would tend to make A/C fuel usage appear to be a higher percent of total fuel usage than under a more representative drive cycle. Other factors also tend to make an idle test overestimate air conditioner energy consumption. Engine heat and air re-circulation that may occur in a typical test chamber tend to raise temperature in front of the vehicle and will raise system pressures, increasing compressor loads during prolonged idle to a much greater extent than occurs in normal driving. Hybrid vehicles or any vehicle with start-stop technology might not adequately be assessed in this test because there would be no guarantee that the engine would be running during an idle test, even if the electric compressor is running. Finally, some specific requirements that might be applied, such as no recirculation unless automatically controlled and max settings for all manual systems, are not representative of real-world conditions, and thus unfairly penalize certain designs. Measurement based on the difference between the two tests has a high degree of uncertainty. Additionally, the proposed idle test is so unique and highly specific that the levels of improvement demonstrated in programs such as IMAC would not be comparable. A test such as this would discourage vehicle manufacturers from implementing some improvements that would provide improved real world fuel economy improvements to the consumer. Furthermore, compliance with this requirement could force design of an A/C system that would sacrifice customer comfort, the primary purpose of an NC system. Overall, as with leakage, a design-based standard would be the simplest and most practical method of approaching mobile air conditioner efficiency, although no standard comparable to J2727 currently exists. A design-based calculation would avoid an ongoing expensive and time-consuming laboratory test program, which would inherently involve thorny problems of test variability, differences among test facilities, test procedure definitions, etc. A design-based approach would capture most of any benefits in this area at lower cost than a more elaborate laboratory testing program. As an interim step to aid development of a good design-based procedure, we would suggest using a reporting program that is based on energy consumption model calculations which uses bench test data for inputs. These calculations would cover energy consumption over a range of operating conditions and in different environments. A similar approach is currently under development in SAEJ2765+J2766, however, these techniques still require substantial development and validation. Industry would like to suggest that EPA consider this type of interim step and would be interested in developing such an approach. While this type of bench testing can offer the biggest advantage of evaluation over a wide range of conditions, total vehicle performance and data verification are necessary to validate the model. As a result, the process would involve a series of developmental steps which might include; (i) establishing vehicle performance criteria through actual vehicle testing, (ii) then validation of the testing protocol and data, and (iii) corroboration of the data with the bench calculations. The Alliance urges EPA to work with ARB and the auto industry to develop one national method for determining indirect GHG emissions from mobile A/Cs.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Laurie Burt

Commenter Affiliation: Massachusetts Department of Environmental Protection

Document Control Number: EPA-HQ-OAR-2008-0508-0453.1

Comment Excerpt Number: 16

Comment: Massachusetts supports the collection of GHG emissions data from mobile sources by EPA in its proposed GHG reporting rule to encourage innovation and efforts to reduce GHG impacts from mobile sources. However, Massachusetts recommends that EPA provide more explanation of its purpose in collecting mobile source data and how these data will be used. For example, under the low emission vehicle program, the California GHG standard requires each manufacturer to comply with the fleet average GHG emissions values from passenger cars (PCs), light-duty trucks (LDTs), and medium-duty passenger vehicles (MDVs) that are produced and delivered for sale each model year. The resulting amount constitutes the g/mi GHG credits or debits accrued by each manufacturer for the model year in order to meet the fleet average GHG emission requirements. The credits or debits are used by each manufacturer to determine its performance in meeting the requirements for the GHG standard and can be used to offset GHG debits or accrue credits for trading. Due to the recent announcement by the Obama administration of new standards to control GHG emissions from vehicles, California proposes to amend its GHG regulation by the end of 2009. The federal and California mobile GHG standards will gradually harmonize by 2012. Because Massachusetts is required to adopt California standards for motor vehicle emissions under Massachusetts law, MGL c.111, Sections 142B and 142K, Massachusetts will amend its regulations accordingly to reflect modifications in the California GHG standards. Therefore, we assume that EPA and California will be working together to harmonize these GHG data reporting requirements, and we hope our comments Will be considered in that effort.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Laurie Burt

Commenter Affiliation: Massachusetts Department of Environmental Protection

Document Control Number: EPA-HQ-OAR-2008-0508-0453.1

Comment Excerpt Number: 17

Comment: Massachusetts believes that small volume manufacturers (SVMs) of PCs, LDTs, and MDVs should not be exempted from reporting the GHG emission rates of their vehicles because they could produce vehicles that emit significantly more pollutants than the larger manufacturers either on a per vehicle basis or on a fleet-wide basis. Excluding SVMs will provide no incentives for these manufacturers to produce more efficient and cleaner vehicles. Therefore, Massachusetts recommends that EPA require reporting from all automobile manufacturers in order to encourage innovation and reduction in GHG emissions from motor vehicles. (Preamble QQ(3)(b)) Alternatively, if SVMs are exempted from reporting GHG emission rates, Massachusetts encourages EPA to define the threshold when a manufacturer changes status and its implications. Massachusetts defines a SVM as vehicle sales less than 4,500 new PCs, LDTs, MDVs, heavy-duty vehicles and heavy-duty engines in California (as the average number of vehicles sold for the three previous consecutive model years). Once a SVM exceeds the threshold for three consecutive years, it is no longer considered to be a small manufacturer. Therefore, Massachusetts proposes that EPA create a ramp-up period for SVM that is transitioning to intermediate and/or large volume manufacturer.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Laurie Burt

Commenter Affiliation: Massachusetts Department of Environmental Protection

Document Control Number: EPA-HQ-OAR-2008-0508-0453.1

Comment Excerpt Number: 19

Comment: Massachusetts recommends that PCs and LDTs manufacturers be required to evaluate various vehicle test groups or engine families (e.g., vehicles with identical engine size, gross vehicle weight, transmission class and driveline, camshaft configuration, valve train configuration and inertia weight class) to capture the key engine-A/C system configurations within the manufacturer's fleet of vehicles (as described in 40 CFR 600.208(a)(2)). Furthermore, the A/C CO₂ Idle Test should simulate "real world" conditions to account for various physical and environmental factors, including the aerodynamics of the vehicle, heat-absorbent paint, and ambient temperature. For example, testing protocols should not only include a test temperature of 75°F but also an alternative scenario temperature of 95°F which is more taxing on the engine and would increase fuel use causing increased CO₂ emissions. Thus, Massachusetts recommends that EPA require the use of the SC03 test to simulate the more extreme driving conditions under which A/C is typically used. (Preamble QQ(3)(c)) EPA requires manufacturers to calculate GHG value in terms of g/min/ft³, in addition to an AC leakage score in g/year. Massachusetts supports the inclusion of GHG emissions from mobile source A/C-related refrigerant leakage, but suggests that EPA provide a more thorough rationale for determining the proposed "leakage score" for a vehicle's A/C-related components and to describe how this information will be used or combined with other GHG information collected from mobile sources. In addition, data results should be in comparable units to make it easier to track and/or compare GHG data among manufacturers and agencies. California requires all manufacturers to submit reports in g/mi for their GHG reporting, which makes it very simple to track. (Preamble QQ(3)(d)) Massachusetts believes it is appropriate to require the A/C CO₂ Idle Test from vehicle manufacturers that install certified engines, including highway heavy-duty truck and bus manufacturers and non-road diesel equipment manufacturers, because these vehicles are generally equipped with A/C systems. We also believe it is appropriate to extend the A/C-related GHG reporting requirements to transportation refrigeration units that are equipped with separate engines that are certified under EPA's non-road engine program. (Preamble QQ(3)(d))

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Filipa Rio

Commenter Affiliation: Alliance of Automobile Manufacturers (Alliance)

Document Control Number: EPA-HQ-OAR-2008-0508-0630.1

Comment Excerpt Number: 7

Comment: The Alliance supports EPA's proposed mobile sources GHG reporting requirements for CO₂ measuring and reporting of new vehicles in accordance with the current emissions certification procedures. EPA has also expressed an interest in collecting additional in-use data as a means for continually updating and improving inventory assessments from total mobile source fleet emissions. The Alliance views in-use reporting as unnecessary because CO₂ emissions do not significantly change over a vehicle's lifetime. CO₂ emissions are unlike traditional criteria pollutants, which may have a propensity to increase over time, because CO₂ is not controlled through specific emission control devices or after-treatment systems which may be susceptible to degradation over time. This phenomenon is well understood as the automotive industry has provided data to EPA during previous GHG discussions and EPA has confirmed

that their in-use compliance test program data also shows that CO₂ emissions has not increased with age. [FOOTNOTE: Memorandum to the Docket EPA-HQ-OAR-2008-0318 from Karl Simon, Dated June 23, 2008, and titled "Light-Duty Vehicle GHG Certification and Compliance Program Options".] Furthermore, EPA is on record stating that there is no reason to believe that CO₂ emissions will show an increase as the vehicle ages as would be expected with criteria pollutants. [Simon, 2008] Therefore, requiring manufacturers to measure and report in-use CO₂ emissions that can be predicted from measurements made at vehicle certification would add unnecessary burden that offered little or no additional value. Additionally, CH₄ and N₂O GHG contributions are 1% of CO₂ (after weighting for Global Warming Potential ("GWP")). Thus any changes over vehicle life would be a fraction of 1% and negligible.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Filipa Rio

Commenter Affiliation: Alliance of Automobile Manufacturers (Alliance)

Document Control Number: EPA-HQ-OAR-2008-0508-0630.1

Comment Excerpt Number: 8

Comment: While CO₂ represents 95% of transportation GHG emissions (per GWP), EPA acknowledges that N₂O only accounts for 1.6% of these transportation GHG emissions. Other studies also support this low number for N₂O emissions. A 1999 study by Ford Motor Company (Environ. Sci. Technol., 1999, 33, 4134-4139) estimated that between 1-3% of the transportation greenhouse gases was attributable to N₂O. In addition, a review of over 200 representative tests conducted by vehicle manufacturers on gasoline and E85 shows that N₂O emissions from cars and trucks are negligible in comparison to CO₂. [SEE DCN:EPA-HQ-OAR-2008-0508-0630.1 for chart that shows representative N₂O test data from Chrysler LLC, Ford Motor Company, and General Motors Corporation, and several CARB default values for N₂O : an "old" and a "new" default value used for standards development work and a "MCSD" (CARB Mobile Source Control Division) default value used for vehicle certification.] The Alliance acknowledges that more data is needed concerning N₂O contribution and supports EPA's efforts to expand the current N₂O knowledge base for inventory purposes. However, EPA's proposed approach for generating the desired N₂O information during the emissions certification and fuel economy testing processes would entail time and expense that is disproportionate to the overall GHG contribution of N₂O emissions. Instead, we urge EPA to enter into a joint test program with industry as a cost-effective means to learn more about N₂O emissions. The results of this test program could then be used to determine whether separate measurement of N₂O emissions is warranted. Absent any new data from a joint test program, EPA is urged to consider allowing the use of a default value for N₂O (0.006 grams per mile) in lieu of measuring N₂O in the exhaust. This factor is identical to that allowed for use by ARB and can be further refined through future studies. As for the proposed N₂O measurement and reporting provisions, there is a high level of concern about incorporating the engine dynamometer test procedures specified in 40 CFR §1065 into the chassis dynamometer test procedures for light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles. 40 CFR §1065 is a complete rewrite of many engine dynamometer test procedures such as heavy-duty on and off road engines, locomotive, marine, small spark ignition, etc. Many of these procedures, specifications, hardware requirements and equations are not compatible with current light-duty test sites and, in some cases, contradict current light- and medium-duty regulations. More specifically: (1) Adopting 40 CFR §1065 equipment requirements into the chassis-certified regulations could impact the stringency of current standards for the light-duty vehicles, light-duty trucks, and medium-duty passenger

vehicles that certify to current regulations with existing test facilities, equipment, procedures and diagnostics. (2) The requirements of 40 CFR §1065, Subparts C and D will conflict with the requirements of 40 CFR §86 and §600 for light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles. Specifically, the standard setting sections, 40 CFR §86 Subparts A & S and 40 CFR §600, require the use of the test procedures set forth in 40 CFR §86 Subparts B & C for certification. In addition, the requirements of 40 CFR §1065, Subparts C & D will conflict with the state of California regulations (and the regulations of other states "Cal LEV" states), because the California regulations base their test procedures on those in 40 CFR §86 and §600. [footnote: Specific codes of the California Environmental Protection Agency - Air Resources Board which require 40 CFR Parts 86 and 600 test procedures are: Title 13, California Code of Regulations, CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 2001 AND SUBSEQUENT MODEL PASSENGER CARS, LIGHT-DUTY TRUCKS, AND MEDIUM-DUTY VEHICLES CALIFORNIA EXHAUST EMISSION STANDARDS AND TEST PROCEDURES FOR 2009 AND SUBSEQUENT MODEL ZERO-EMISSION VEHICLES AND HYBRID ELECTRIC VEHICLES, IN THE PASSENGER CAR, LIGHT-DUTY TRUCK AND MEDIUM-DUTY VEHICLE CLASSES, Subparts B & C.] (3) 40 CFR §1065 provisions will require significant hardware, software, license and acquisition, and procedural and diagnostic modifications to existing chassis dynamometer test facilities. These changes will be expensive with a minimum expenditure of \$100,000/dynamometer test cell and upwards of \$1,000,000/manufacture depending upon the number of test cells at each manufacturer and it will not be possible for manufacturers to modify today's robust chassis dynamometer certification test sites by MY2012 (certification testing done in CY2011). Manufacturers would need sufficient lead-time (at least until MY 2013) to implement the required facility changes. (4) N₂O emissions measurement requires a new c N₂O alibration gas to be NIST (National Institute of Standards and Technology) traceable, typically within ±1.0% of the NIST accepted value. To our knowledge, there are no such standards available "off the shelf" from vendors or NIST. NIST has in the past analyzed special batches of N₂O gas for industry, but these were one-off custom bottles. For the above reasons, we recommend that all 40 CFR §1065 requirements be deleted from all chassis dynamometer certification testing of light-duty vehicles, light-duty trucks, and medium-duty passenger vehicles. We recommend retaining the existing Parts 86 and 600 requirements with modifications to include N₂O instrument specific test procedures in the appropriate sections of 40 CFR §86 Subpart B. These modifications could be similar to the analyzer specific procedures being proposed for 40 CFR §1065 minus any criteria that are contrary to current Parts 40 CFR §86 and §600. In addition, provisions should be added to allow the use of Photo Acoustic analyzers (e.g., INNOVA®), Fourier Transform Infrared Spectroscopy or other methods upon EPA's approval as an option for the measurement of N₂O. This technology is in use today at some manufacturers' emission test laboratories, primarily for the purposes of measuring ethanol, but is also used to measure N₂O. In the event that EPA decides to pursue actual N₂O measurement and reporting, as proposed, EPA should provide sufficient lead-time (at least until MY 2013) to implement such a program. EPA should also limit the certification test modes for N₂O emissions measurement (e.g., FTP mode on emission data vehicle only) to minimize manufacturers' burden.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: See Table 2

Commenter Affiliation:

Document Control Number: EPA-HQ-OAR-2008-0508-0476.1

Comment Excerpt Number: 1

Comment: Given that the 2011 MY starts on January 2, 2010, there is very little lead-time available for manufacturers to implement new test procedures or purchase, install, and validate new test equipment in their laboratories. Additionally, the proposal would require re-testing of all carry-over models, which AIAM does not believe is appropriate. Therefore, for the 2011 MY requirements in the GHG reporting rule, AIAM believes that EPA should limit its reporting requirements to the emissions categories which auto manufacturers are already measuring in the current vehicle emissions certification program, and carry-over models should be exempted. In the current program carbon dioxide and methane exhaust emissions already are measured and carbon dioxide emissions already reported. Consequently, it would be a small incremental burden for the additional reporting of methane emissions. However, the emissions of nitrous oxide are not currently measured, and most auto manufacturers' laboratories are not equipped to collect this information. Our member companies advise us that discussions with equipment vendors of laboratory grade equipment indicate that there are no currently available analyzers which can reliably measure the very low levels of nitrous oxide emissions from current vehicle technologies. The enclosed table [SEE PDF FILE for data graph showing N₂O emissions for various vehicle technologies] from a UC Riverside test program indicates that ULEV emission rates of nitrous oxide are on the order of 7 mg/mi and SULEV emission rates are on the order of 1 mg/mi. Given these very low emissions rates, EPA should re-evaluate whether it is cost-effective to require auto manufacturers to make the investments needed for new laboratory equipment and the extra burden of testing for nitrous oxide emissions. A better approach may be to periodically evaluate the emissions of new technologies through existing test laboratories and use those results to estimate the fleet inventories. In any case, given the lack or limited availability of test equipment for measuring reliably the nitrous oxide emissions at the levels required, at a minimum EPA should provide substantial additional lead-time to manufacturers for this element of the proposal.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: See Table 1

Commenter Affiliation:

Document Control Number: EPA-HQ-OAR-2008-0508-0635

Comment Excerpt Number: 58

Comment: For light-duty and heavy-duty vehicles, measuring CH₄ and N₂O requires only modest additional equipment to that used for CO₂ testing.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: See Table 2

Commenter Affiliation:

Document Control Number: EPA-HQ-OAR-2008-0508-0476.1

Comment Excerpt Number: 3

Comment: To be clear, while we are requesting that EPA defer action on the elements of the GHG reporting proposal dealing with nitrous oxide emissions, indirect AC emissions and direct AC emissions, we believe it would be entirely appropriate for EPA to consider these topics in the upcoming EPA/DOT Joint Rulemaking To Establish GHG Emissions and CAFE Standards

announced in the Notice of Intent published in the Federal Register on May 22, 2009 (74 FR 24007). We understand that these joint EPA/DOT proposed rules will be issued within a few months. That rulemaking process will be a more appropriate venue for consideration of the test procedure and protocol changes that were described in the GHG reporting proposal. This short delay also would give EPA more time to work with the auto manufacturers, suppliers, and the SAE committee on the technical issues involved with the new GHG testing and reporting procedures. If for any reason you cannot defer action on any or all of these three elements of the proposal until we can reach consensus on the technical issues raised herein, we recommend that at a minimum you add provisions in the GHG reporting rule to grant the agency the administrative flexibility to approve alternative testing procedures and reporting requirements for these three elements.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Ward Atkinson

Commenter Affiliation: Sun Test Engineering

Document Control Number: EPA-HQ-OAR-2008-0508-0614.2

Comment Excerpt Number: 1

Comment: 1. The proposal for testing of air conditioning systems is not a reliable or accurate method of determining A/C related emissions as a customer typically uses the system. It will not reflect the efficiency changes that take place at different vehicle speeds and vehicle operating conditions. Furthermore, facility variations that exist between the EPA and OEMs will cause a wide difference in the results of fuel consumed by the AC system from facility to facility. [The TNO report sponsored by the EU and discussed later in this document supports this conclusion.] The Global Refrigerants Energy & Environmental Mobile Air Conditioning Life Cycle Climate Performance (GREEN-MAC-LCCP?) model that is available on the EPA Web site is a recognized by regulatory and industry groups as a method to establish A/C related CO₂ equivalent emissions. The published SAE Standard J2766 Life Cycle Analysis to Estimate the CO₂-Equivalent Emissions from MAC Operation provides the guidelines that can be used to compare MAC systems. This allows for virtual CAE simulation according to the J2765 standard or bench testing of the actual system components. The flexibility of the model to analyze any alternative MAC system using reliable, accurate, and repeatable bench data, makes this model the best available methodology to estimate vehicle CO₂ equivalent emissions due to MAC operation. The predicted CO₂ equivalent data from the model compare favorably to available vehicle test data from vehicle manufacturers. SAE and Industry activities have been evaluating various methods to evaluate “Total Environmental Issues of MAC systems”. As new testing approaches are studied a system checklist, similar to J2727 System Refrigerant Emission Chart may be possible to estimate CO₂ equivalent emissions. It is requested that all regulatory authorities consider establishing a single global approach in identifying MAC system related vehicle emissions. 2. As discussed in the EPA proposal, SAE ICCV has developed and published J2765 Procedure for Measuring System COP [Coefficient of Performance] of a Mobile Air Conditioning System on a Test Bench. This standard provides the foundation for inputs to SAE J2766 Life Cycle Analysis and is a more precise way to quantify the energy consumption of the AC system over the full operating range of the system. 3. EPA proposal for “characterizing leakage emissions later in the vehicle’s life” cannot be established at this time without significant research efforts. With reduced system refrigerant charge it has become very important that refrigerant leakage is tightly controlled so that system-cooling performance will be maintained for the consumer. OEMs have made significant improvements to reducing system refrigerant

leakage and meet customer needs and the industry believes the effort to establish leakage over life would not be beneficial. Based upon 2003 Mobile Air Conditioning Society Field Service data, typical service interval due to leakage for MAC was after 5 to 7 years of operation based on 1996-98 vehicles. With the average 2009 MY system emission values being in the 14.1 gram/yr range [based on SAE J2727 results reported to the state of Minnesota for the 2009 model year vehicles] the system refrigerant loss, before requiring service, should be a longer time period than reported in the 2003 MACS Field Report. Industry estimates that the service interval due to leakage will be 10-12 years for 2009 vehicles based on this data.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Ward Atkinson

Commenter Affiliation: Sun Test Engineering

Document Control Number: EPA-HQ-OAR-2008-0508-0614.2

Comment Excerpt Number: 2

Comment: Repeatability TNO Report to EU in July, 2005. Many studies attempting to measure mobile air-conditioning system energy and comparisons of simulations at different test facilities have not been satisfactory. Test results identified in the TNO Report to the European Commission in July 2005 as indicated below compared vehicles in two different facilities with a variation in results. (See DCN EPA-HQ-OAR-2008-0508-0614.2 for Figures 1 & 2) This TNO program funded by the European Commission concludes that it is not possible to accurately measure the effects of the mobile A/C system on CO₂ emissions of the vehicle. (See DCN EPA-HQ-OAR-2008-0508-0614.2, page 9 for more details below TNO Report)

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Ward Atkinson

Commenter Affiliation: Sun Test Engineering

Document Control Number: EPA-HQ-OAR-2008-0508-0614.2

Comment Excerpt Number: 3

Comment: Based upon industry expertise, the 75-degree idle EPA proposal will be unrepresentative and inaccurate data on A/C system energy consumption of the typical customer with the vehicle driven as customers would normally drive them. In addition, an idle test will not identify MAC system efficiency technologies. Vehicle test repeatability in climatic facilities and/or chambers as compared to “real world” operation or other similar test facilities is a major concern in attaining comparable test results. Extensive industry testing indicates that the test chambers design and the method of test can control the resulting emissions more than the AC system design and its efficiency. The difficulty of using different test facilities to attain comparable test results is well known and is discussed in SAE J2777 Recommended Best Practice for Climatic Wind Tunnel Correlation. The test repeatability, in a chamber or another test facility chamber, involves many factors, including and not limited to, how temperature-humidity and airflow are controlled in the chamber and the vehicle profile including engine compartment airflow management. This is not a new issue to the industry and SAE and after many years of development published this best practice in January 2007. It is important to note that the document is a SAE Recommended Practice and not an SAE Standard. This is due to the fact that all the industry experts on climatic test facilities that developed the document know the

complexity for these types of test facilities. The EPA proposed rule has no facility limits prescribed and hence even more variation can be expected. WIND TUNNEL COMPARISON TEST SCHEDULES [Extract from SAE J2777] “The purpose of constructing the following test procedures is to allow a comparison of test data between different tunnels.” Typical IDLES AND SOAKS parameters are also addressed in paragraphs 7.0 and 7.2 of the SAE J 2777 standard. As more complex test comparisons, such as operation of the A/C system, are added many variables result in the facilities capability of producing repeatable results. Testing the same vehicle at another facility can result in a different level of performance.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Ward Atkinson

Commenter Affiliation: Sun Test Engineering

Document Control Number: EPA-HQ-OAR-2008-0508-0614.2

Comment Excerpt Number: 4

Comment: The preamble states “Second, EPA is seeking comment on basing reporting requirements on a “bench” test procedure similar to the one being developed by the SAE and the University of Illinois, which was employed to measure A/C efficiency improvements for the industry/government Improved Mobile Air Conditioning project”. As mentioned in the EPA proposal with the participation of industry experts SAE has developed several Standards that address A/C system energy and vehicle emission issues. These documents include the results of a several million-dollar industry and US EPA funded SAE Cooperative Research programs. The ICCC feels this is only documented method for accurately measuring and reporting the impact of MAC systems on vehicle CO₂ emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Ward Atkinson

Commenter Affiliation: Sun Test Engineering

Document Control Number: EPA-HQ-OAR-2008-0508-0614.2

Comment Excerpt Number: 5

Comment: The proposal states “EPA is proposing a set of component and system leakage scores, based closely on J2727, but expanded to place greater emphasis on characterizing leakage emissions later in the vehicle’s life.” “Each score would be a design based, “leakage-equivalent” value that would take into account expected early-in-life refrigerant leakage from the specified components and systems.” SAE Standard J2727 was developed from laboratory data and on the road fleet data over several operational years. Development of SAE J2727 was the result of SAE Cooperative Research Programs that were funded and supported by industry and governmental agencies. The SAE CRP activities and analysis included international vehicle “on the road fleet refrigerant leakage data”, and mini-shed dynamic operation of complete MAC systems. The mini-shed test procedure is referenced in J2727, thus allowing evaluation of a system being evaluated by using the J2727 emission chart or conducting a mini-shed emission test as identified in SAE J2763 Test Procedure for Determining Refrigerant Emissions from Mobile Air Conditioning Systems. Systems that are tested in the mini-shed, J2763 procedure, will have less emissions due to the fact that the J2727 provides an additional leakage over the design intent rate to account for production variation.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Ward Atkinson

Commenter Affiliation: Sun Test Engineering

Document Control Number: EPA-HQ-OAR-2008-0508-0614.2

Comment Excerpt Number: 6

Comment: At the present time there is not any data on system refrigerant emission rates on recent designed MAC systems (2003 MY and later) that are operational in the fleet. However, there is data that indicates that system deterioration with age has been greatly reduced in recent MAC systems. Should reduced refrigerant charge MAC systems (current production) have high system refrigerant leakage, poor cooling performance will occur requiring service in a shorter period of time. 1 Field Service data indicating the reduced service trends can be found in from Montreal to Kyoto Two Decades of Change in the Mobile A/C Industry Published in April 2008 by Mobile Air Conditioning Society Worldwide. Service profiles indicate that vehicle A/C systems, out of new vehicle warranty, requiring service in the one to five year age group in the 2003 MAC Field Survey as compared to the similar service requirements from the 1997 and 2000 survey years are noticeably less. MAC systems produced in the late 1990's generally did not require service for 5 to 7 years. With new system technologies and data from the SAE I-MAC Cooperative Research program a correctly assembled single evaporator system has a leakage rate in the range of 10 grams/year. It should also be noted that new system single evaporator system average refrigerant charge amounts have been reduced from 26.9 ounces (763 grams) in MY 2000 to 22.2 ounces (635 grams) in MY 2009. With this reduced system refrigerant charges the tolerance for refrigerant loss before the system will no longer provide cooling, requiring recharge, indicates that current systems have reduced emissions over their operating age. J2727 Data Supplied Under State Regulatory Requirements Based upon the data supplied to the state of Minnesota, the average 2009 MY single evaporator emissions rate is 2.3% or 14.1 grams (0.49 ounce) of refrigerant per year. The average single evaporator system refrigerant charge amount is 635 grams (22.2 ounces). For a MAC system to operate properly and provide cooling the system must have sufficient charge to provide a continuous supply of liquid refrigerant to the evaporator control device. Since there are no long-term hard data on 2009 MY systems, that employ new technologies, it is extremely speculative on what changes in system refrigerant emission rates may be. The information found in figure 3 projects the affect of refrigerant loss that the consumers would identify that their system has reduced cooling performance. "Real World" experience indicates that MY 2000 systems are not requiring refrigerant in less that 7 to 9 years. Assuming a constant refrigerant loss of 14 grams a year the perceived loss of A/C system cooling would occur in 10-12 years. As proposed by EPA, at this time, it is very speculative to expected "early-in-life refrigerant leakage" and establish any value to the J2727 ratings. The current global refrigerant, HFC-134a, having a high Global Warming Potential of 1430 represents less than 5% of the total mobile air conditioning [MAC] lifetime emissions. However, the emissions from the vehicle tail pipe related to MAC, to provide customer cooling, represent 80% of the lifetime MAC emissions. And these total emissions are estimated to be 4-7% of the total vehicle CO₂ equivalent emissions, with the refrigerant portion representing 0.8 – 1.4% of the total emissions. It is important to note that the ratio of the MAC direct and indirect emissions are influenced by the local weather conditions the systems are operated in. MAC systems operated in warm climates will have greatest indirect emissions. Based upon the fact that HFC-1 34a has been readily availability to consumers and leaking MAC systems have had "gas and go" service has resulted in a major portion of the HFC-1 34a loading

in the atmosphere. Considering that HFO-1234yf, which has a very low GWP of 4 and short lifetime, and the emissions of new systems will be very low, it is therefore questionable that direct emissions from new systems are as important for the environment as proper control of refrigerant and servicing of the current HFC-134a on the road fleet. [See DCN EPA-HQ-OAR-2008-0508-0614.2 for Figure 3 showing system Refrigerant loss and list of SAE published documents.]

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Keiko Kawaguchi

Commenter Affiliation: Mazda North American Operations

Document Control Number: EPA-HQ-OAR-2008-0508-0716.1

Comment Excerpt Number: 1

Comment: We believe EPA's proposed approach for generating the desired N₂O information during the emissions certification and fuel economy testing processes would require significant time, expense and resources that are disproportionate to N₂O emissions contribution to transportation GHG emissions. Mazda does not have any test equipment that is capable of measuring N₂O for emission purpose in our current chassis dynamometer test facilities. Cost for introducing such equipment including but not limited to modifying the existing chassis dynamometer test cells is contained in the Alliance comment. This will be extremely expensive and we believe that it will not be possible for us to modify our certification test facilities by MY2012. We recommend that all 40 CFR §1065 requirements for the N₂O emissions measurement and reporting be deleted from all chassis dynamometer certification testing. Mazda recommends that EPA consider the use of a default value of N₂O = 0.006 grams per mile, which is identical to the factor allowed for use by ARB, in lieu of measuring N₂O emissions. In the event that EPA concludes that comprehensive N₂O reporting program is necessary, we request that flexibility for the selection of the N₂O emissions measurement system be provided and that certification test modes to measure N₂O be limited to, e.g., FTP modes on emission data vehicle only, to minimize manufacturers' burden.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

Commenter Name: Laurie Burt

Commenter Affiliation: Massachusetts Department of Environmental Protection

Document Control Number: EPA-HQ-OAR-2008-0508-0453.1

Comment Excerpt Number: 18

Comment: Massachusetts urges EPA to provide more detailed guidelines for vehicle manufacturers to follow in terms of performing GHG emissions tests, including the data collection procedures for manufacturers. For example, Massachusetts suggests that EPA identify the testing groups based on specific models and/or vehicle types. Data collection must be consistent across all manufacturers in order for the data to be accurate and reliable. If manufacturers are allowed to set and/or select their own representative number of vehicles or subset of vehicles for testing, then the results would be inconsistent and increase the difficulty in evaluating and comparing the data. (Preamble QQ(3)(c)) As an example of detailed guidelines, Massachusetts requires manufacturers to calculate the fleet average GHG exhaust mass emission

for all new PCs, LDTs and MDVs. Each manufacturer must calculate both the “city” and “highway” g/mi average CO₂ values for each GHG vehicle test group.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0630.1, excerpt 6.

6. LOCOMOTIVE ENGINES

Commenter Name: Steven D. Meyers

Commenter Affiliation: General Electric Company (GE)

Document Control Number: EPA-HQ-OAR-2008-0508-0532.1

Comment Excerpt Number: 23

Comment: If EPA includes CH₄ and N₂O in the reporting requirement for locomotives, the Agency needs to modify the timing and frequency of reporting to take into account the test facility upgrade schedule and capacity. GE agrees with EPA that including GHG emissions at the time of certification is the appropriate frequency for submissions. GE can comply on the schedule in the proposal for CO₂. For CH₄ and N₂O, GE estimates that it will take approximately 12-24 months (depending on the supply availability of the measurement equipment) from the date of promulgation to procure, install, and validate the additional measurement equipment. In which case, GE would not be able to start reporting CH₄ and N₂O emissions until approximately 24 months after promulgation of a mandatory GHG monitoring rule. In addition to the time required to purchase the instrumentation and to install and commission the equipment is very likely to disrupt test cell operations. It will be necessary to shut down cells during a portion of the upgrade process making them unavailable for current emissions testing and Tier 3 and Tier 4 development testing. GE would not likely be forced to shut down all test cells simultaneously, however it's current test cells are being utilized at full capacity in support of current mandatory constituent emissions testing as well as in support of Tier 3 and Tier 4 development. Any reduction in capacity due to test cell unavailability would likely have a negative impact on Tier 3 and Tier 4 development schedules. GE does not currently know the magnitude of the impact but believes alternative non-GE owned test sites/facilities will also not likely to be available, as they would also be undergoing upgrades.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: David E. Brann

Commenter Affiliation: Electro-Motive Diesel, Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0361.1

Comment Excerpt Number: 4

Comment: Locomotive emissions of criteria pollutants are reported, under parts 92 and 1033, in grams per brake horsepower hour (g/bhp-hr). In its rule proposal, EPA has required, in proposed paragraph 1033.235(i), that manufacturers “. . . use the same units and modal calculations as for your other results . . .,” which would indicate reporting in g/bhp-hr, but then goes on to require, in subparagraphs (1), (2), and (3), that CO₂, N₂O, and CH₄ results be reported in grams per kilowatt-hour (g/kW-hr). To avoid confusion, all duty cycle brake specific results for all locomotive or locomotive engine emissions should be reported in grams per brake horsepower hour.

Response: EPA is making this change.

Commenter Name: See Table 1

Commenter Affiliation:

Document Control Number: EPA-HQ-OAR-2008-0508-0635

Comment Excerpt Number: 63

Comment: Extending the measurement and reporting requirement for, CH₄, and N₂O to include locomotive and marine diesel engines, is desirable and relatively easily implemented.

Response: EPA is finalizing measurement and reporting requirements for CO₂, CH₄, and N₂O to include locomotive and marine diesel engines other than C3 marine engines. C3 marine engines are very large and manufacturers generally test them as they are installed into ships rather than in a laboratory setting. For this reason, we have determined that requiring the addition of new N₂O and CH₄ measurement equipment for C3 engines would not be practical, and, as proposed, are not requiring such reporting in this rule. See also the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Steven D. Meyers

Commenter Affiliation: General Electric Company (GE)

Document Control Number: EPA-HQ-OAR-2008-0508-0532.1

Comment Excerpt Number: 21

Comment: Locomotive and like-sized diesel marine engine GHG reporting should be limited to CO₂. Based on data contained in the EPA document "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2007", in 2007, the combination of CH₄ and N₂O represented less than 1 % of the total rail-generated GHG emissions, of which locomotives are only a part. CO₂ is by far the greater GHG emission from locomotives. In addition, based on data from the same report, the rail contribution to the total CH₄ and N₂O inventory is approximately .02% and .1% respectively. Given the extremely small percentage of the total CH₄ and N₂O inventories represented by locomotive and like sized marine engines, GE believes that the incremental cost to instrument its large engine test cells to measure CH₄ and N₂O is not justified. GE estimates that the cost to outfit all of its test cells, which will likely be required to meet EPA's reporting requirements and GE's development needs, will be greater than \$500,000. Like other locomotive and marine engine manufacturers, GE is currently spending tens of millions of dollars to develop and field the recently promulgated Part 1033 locomotive upgrade kits. Furthermore, hundreds of millions of dollars will be spent to develop and implement solutions for the new Tier 3 and Tier 4 locomotive and marine engine emissions regulations. It does not make sense to impose additional costs for GHG reporting of minor constituents given the burden currently placed on the industry to achieve these other standards.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Steven D. Meyers

Commenter Affiliation: General Electric Company (GE)

Document Control Number: EPA-HQ-OAR-2008-0508-0532.1

Comment Excerpt Number: 20

Comment: EPA proposes that CO₂ emissions be reported in the same cycle-weighted, work-based format (i.e., g/bhp-hr) as used for criteria pollutant emissions reporting. While GE is generally supportive of EPA's desire to gather emissions information on CO₂, we are concerned that the approach taken perpetuates (1) a focus solely on the locomotive engine and (2) use of the cycle-weighted, work-based format without considering the overall efficiency of the system. EPA states that it intends to use the data it gathers to form the basis of regulatory programs for GHGs. However, looking solely at the engine and the emissions per unit of engine output fails to consider the overall efficiency of the locomotive (and other modes of transport). In so doing, it risks missing the ability to reduce emissions of GHGs and potentially risks increasing overall GHG emissions. Instead EPA needs to gather data in a format that reflects goods movement – i.e., the amount of GHG emissions to move goods a set distance. As EPA is aware (as evidenced by its reference to such programs in the Advanced Notice of Proposed Rulemaking on regulating GHGs issued last year), there are numerous opportunities to reduce GHGs from the locomotive as a whole. EPA has already incorporated a systems approach in part of the locomotive emissions program (see 73 Fed. Reg. 37096 (June 30, 2008)) but EPA could take additional steps by gathering the information on the locomotive as a whole rather than just focusing on the engine. Accounting for system and transportation mode efficiencies will be increasingly important going forward in order to encourage solutions that achieve the greatest possible net reduction in total emissions as the EPA seeks to establish controls for both criteria pollutants and GHG emissions. Technology that only applies to engine out emissions has typically forced a trade off between criteria pollutants and GHG emissions. As an example, it is widely known that reducing NO_x by adjusting fuel injection timing results in increased fuel consumption and CO₂ emissions. Likewise other technologies that negatively impact fuel consumption will also increase CO₂ emissions.

Response: EPA considers the accuracy of GHG data using existing test procedures to be sufficient for the purposes of this reporting rule. If and when EPA pursues GHG emission standards for locomotives, we would expect to consider test procedure changes such as the commenter suggests.

Commenter Name: Steven D. Meyers

Commenter Affiliation: General Electric Company (GE)

Document Control Number: EPA-HQ-OAR-2008-0508-0532.1

Comment Excerpt Number: 24

Comment: GE requests that reports already being submitted to EPA satisfy the reporting requirement. Because locomotive manufacturers already report CO₂ in the certifications, EPA should include a provision in the final rule that allows those certification reports to satisfy any requirements of this rule.

Response: The requirements of this reporting rule will be met through manufacturer certification reports.

Commenter Name: Michael J. Rush and Louis P. Warchot

Commenter Affiliation: Association of American Railroads (AAR)

Document Control Number: EPA-HQ-OAR-2008-0508-0655.1

Comment Excerpt Number: 1

Comment: EPA proposes to change the certification requirements for manufacturers and remanufacturers of locomotives by requiring the reporting of CO₂, CH₄, and N₂O . As EPA notes, CO₂ is already measured during certification testing and the railroads have no objection to a mandatory CO₂ reporting requirement. However, AAR does oppose mandatory reporting for CH₄ and N₂O . AAR consulted with Southwest Research Institute (SWRI) concerning the expense of testing for CH₄ and N₂O. It appears that the capital cost could be \$100,000 per test cell for the equipment, with installation adding another \$25,000. SWRI has three locomotive test cells, so the cost to SWRI alone could be approximately \$400,000. Of course, a number of other companies conduct certification tests, so the industry is facing a substantial expense should the requirement for certification testing for CH₄ and N₂O be adopted. Significantly, testing for CH₄ and N₂O would be useless to EPA. According to EPA's "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2007," annual railroad emissions of CH₄ and N₂O together total 0.5 Tg CO₂ Eq. Annual CO₂ railroad emissions total 50.8 Tg CO₂ Eq. Put another way, EPA data show that annual railroad CH₄ and N₂O emissions, on a CO₂Eq basis, are slightly less than 1 percent of railroad CO₂ emissions. Since railroad CH₄ and N₂O emissions are so small, certification testing of CH₄ and N₂O would serve no useful purpose. AAR cannot fathom how EPA would make use of the data for regulatory purposes. Given the expense of installing equipment to test for CH₄ and N₂O, EPA should not lightly impose the proposed testing requirement.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: David E. Brann

Commenter Affiliation: Electro-Motive Diesel, Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0361.1

Comment Excerpt Number: 1

Comment: EPA proposes to require methane (CH₄) and nitrous oxide (N₂O) emissions to be measured and reported on all certification tests. EMD has five locations where we carry out such tests: two locomotive test facilities, two banks of test cells, and one mobile facility. Each one of these locations is served by an emissions bench. Our investigation shows that we would have to expend \$60,000 for the required analyzers and other instrumentation at each location, for a total capital expenditure of \$300,000. The required expenditure is increased by the low detection range needed. Added to this would be an expenditure of \$16,000 per site per year for required gases, upkeep, and other continuing expenses, for a total ongoing expense of \$80,000 per year. EPA estimated \$50,000 per test cell for equipping cells to measure CH₄, and \$20,000 per test cell for N₂O measurement capabilities, including analyzers and related costs, including installation. The expenditures would apparently be for little benefit. It does not appear that EPA expects large emissions of CH₄ or N₂O from locomotives or marine engines. While the criteria pollutants, which include nitrogen oxides, carbon monoxide, unburned hydrocarbons, and particulate matter, are all to be reported to the nearest tenth or hundredth of a gram per brake horsepower hour (locomotives) or per kilowatt hour (marine engines), EPA has proposed that CH₄ and N₂O be reported to the nearest thousandth of a gram per kilowatt hour. CH₄ and N₂O of course have larger global warming potential (GWP) than any of the criteria pollutants or carbon dioxide. According to EPA, CH₄ has 21 times the GWP of carbon dioxide, and N₂O 310 times. Even so, the contribution to the total greenhouse gas emissions from locomotive and Category 2 marine engines of CH₄ and N₂O would seem to be very small, as shown in the following analysis. EMD is not aware of any tests on locomotive or Category 2 marine engines

that measured methane and nitrous oxides emissions separately from those of other hydrocarbons and nitrogen oxides. However, it is well known that hydrocarbon emissions from liquid-fueled compression ignition engines consist primarily of compounds other than methane. EPA has recognized this fact in its recently finalized emissions rule for locomotives, 40 CFR part 1033. That rule, while requiring only the non-methane hydrocarbon emissions for Tier 4 locomotives to be reported, allowed manufacturers that did not wish to make the expenditure to measure non-methane hydrocarbons (NMHC) separately from total hydrocarbons (THC) to approximate NMHC by multiplying THC by 0.98, indicating that the hydrocarbon emissions from Tier 4 engines are expected to be approximately two per cent methane. The part 1033 provision, intended to spare manufacturers the expense of measuring what was expected to be a trivial quantity, would be negated by the present rule proposal. EMD Tier 2 engines for freshly manufactured locomotives are certified at 0.13 g/bhp-hr total hydrocarbons on the EPA line-haul cycle. At the same time, EMD engines typically emit between 500 and 550 g/bhp-hr CO₂ on that cycle. If the hydrocarbon emissions are two per cent methane, then methane emissions are 0.0026 g/bhp-hr. If CO₂ emissions are, conservatively, 500 g/bhp-hr, then the global warming potential of the CO₂ emissions is $500 / (2.1 \times 0.0026) = 9158$ times that of the methane emissions. The flaw in the above analysis is that the 0.98 factor for adjusting total hydrocarbon emissions to NMHC's applies only to Tier 4 engines, whose catalytic after treatment devices might be expected to change the composition of the emitted hydrocarbons. However, *reductio ad absurdum*, if the entire 0.13 g/bhp-hr hydrocarbon emission of the Tier 2 engine is considered, very much contrary to fact, to be methane, the GWP of the CO₂ emissions is still $500 / (2.1 \times 0.13) = 183$ times that of the methane emissions from the same engine. Therefore, the GWP of the methane emissions from a Tier 2 engine is not more than 0.55 per cent that of the CO₂ emissions from the same engine, and probably much less. While, as noted above, there are no measurements of N₂O emissions from locomotive or Category 2 marine engines known to EMD, a similar analysis is likely to pertain. Diesel engines emit nitrogen oxides primarily as nitric oxide, NO, with the majority of the rest being nitrogen dioxide, NO₂. Only a very small fraction of the total emissions is made up of other oxides of nitrogen. While the GWP of N₂O is quite high, at 310 times that of CO₂, the total emissions are likely to be very low, and therefore, in a manner similar to that of methane, the total GWP of the N₂O emissions from an engine is likely to be dwarfed by that of the CO₂ emissions. In summary, EPA is proposing to require engine manufacturers to make major expenditures for equipment to measure engine emissions of gases whose global warming potential is trivial compared to that of the carbon dioxide emissions from the engines. The proposed requirement is not even in support of regulation of the emissions of those gases, but is simply a data gathering expedition. Such data could be gained much more efficiently by a targeted program aimed at determining, on a sampling basis, the CH₄ and N₂O emissions from representative engines. The program might involve contracting with a testing agency to equip itself to carry out the measurements and to measure CH₄ and N₂O emissions from selected locomotive and marine engines. EPA should carry out such a program before saddling each and every manufacturer with this expensive requirement. In short, EPA should find out if there is anything really there to be measured, before requiring everybody to measure it. While EMD does not believe that an EPA requirement to measure and report CH₄ and N₂O emissions would yield useful data, we do have several other recommendations that we would ask EPA to consider, should EPA decide to finalize such a reporting requirement despite our misgivings. They are laid out in subsequent paragraphs.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

7. MARINE ENGINES AND PERSONAL WATERCRAFT

Commenter Name: David E. Brann

Commenter Affiliation: Electro-Motive Diesel, Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0361.1

Comment Excerpt Number: 2

Comment: The proposal would add the requirement to measure and report carbon dioxide (CO₂) emissions from Category 2 marine engines through the 2010 model year (reporting of CO₂ emissions from locomotive engines is already required under part 1033), and add the requirement to report methane (CH₄) and nitrous oxide (N₂O) emissions on locomotive and Category 2 marine engine certification test data starting with the 2011 model year. Testing for the 2011 model year certification will be carried out in 2010. EMD is equipped to measure carbon dioxide emissions, and in fact we do so in all of our emissions testing; we have no difficulty with EPA's proposed expansion of CO₂ emissions reporting to all of our products. We are not, however, equipped to measure CH₄ emissions separately from total hydrocarbons or to measure N₂O emissions separately from those of other nitrogen oxides. Further, the measurement protocols for N₂O emissions are just now being proposed, and there is an active industry-EPA discussion on exactly what final form they will take. It would appear, though, that EPA will not issue a final rule until 2010. EPA's history is that a year or more passes between rule proposal and the issuance of the final rule; for example, the NPRM for the recently finalized locomotive and marine emissions rule was published in the Federal Register on April 3, 2007, and the final rule was published on May 6, 2008, thirteen months later. As another example, the NPRM for the nonroad spark-ignited engine emissions rule was published on May 18, 2007, and the final rule was published on October 8, 2008, seventeen months later. Further, EPA is already late with this rule. As noted in the Preamble, under the FY 2008 Consolidated Appropriations Act the proposed rule was to be published by September 26, 2008, and the final rule by June 26, 2009. In actuality, the NPRM was published on April 10, 2009, nearly seven months after the requirement of the Act, and the comment period for the present proposal ends only seventeen days before the statutory deadline for final rule publication. Based on history, it seems highly unlikely that a final rule will be published before spring 2010. It is unreasonable to expect engine manufacturers to make investments of the magnitude discussed above without a final rule, yet, in order to carry out the testing required for the 2011 model year, that is what EPA is implicitly expecting manufacturers to do. EPA should allow at least two years from the effective date of the final rule, including finalizing the measurement protocols for N₂O, before measurement and reporting of CH₄ and N₂O are required, to give manufacturers time to procure the required equipment and to become proficient in its use.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: See Table 1

Commenter Affiliation:

Document Control Number: EPA-HQ-OAR-2008-0508-0635

Comment Excerpt Number: 64

Comment: Extending the measurement and reporting requirement for CO₂, CH₄, and N₂O to include locomotive and marine diesel engines, is desirable and relatively easily implemented.

Response: EPA agrees with the commenter and is finalizing the proposed reporting

requirements.

Commenter Name: Mark R. Riechers

Commenter Affiliation: Mercury Marine

Document Control Number: EPA-HQ-OAR-2008-0508-0643

Comment Excerpt Number: 1

Comment: Mercury Marine would be directly affected by these new EPA requirements. We have been measuring and reporting carbon dioxide CO₂ emissions as required by the California Air Resources Board since 2008. Our test cells have CO₂ analyzers and typical CO₂ emissions from marine engines can range between 700 and 1000 g/kW-hr. Mercury Marine strongly opposes EPA's proposal to require testing and reporting of nitrous oxide (N₂O) and methane (CH₄) due to the analytical challenges, the quantity of emissions and the significant cost. An alternative would be to report an emission factor for N₂O and CH₄ which would allow marine engine manufacturers to report emissions without incurring the exorbitant cost of having to measure emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Mark R. Riechers

Commenter Affiliation: Mercury Marine

Document Control Number: EPA-HQ-OAR-2008-0508-0643

Comment Excerpt Number: 3

Comment: Although CH₄ Emissions are more straightforward to measure, they also track with the CH₄ content of the fuel. As such, requiring marine engine manufacturers to purchase expensive equipment, and test for methane, when it would be a relatively easy exercise to develop emissions factors, which would be sufficiently accurate for the small contribution from marine, should be seen as a much more viable alternative.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Mark R. Riechers

Commenter Affiliation: Mercury Marine

Document Control Number: EPA-HQ-OAR-2008-0508-0643

Comment Excerpt Number: 2

Comment: EPA is proposing in §1065.257 that N₂O analysis must be conducted in conjunction with diluted exhaust and batch sampling (bag sampling). Full-Flow Constant Volume Sampling Systems (CVS) or Partial Flow Sampling Systems (PFSS) are not trivial systems for recreational marine engines and products. Water is injected into exhaust systems of marine engines to keep components such as gear cases and propeller hubs cool. Large amounts of water vapor and steam are present in exhaust which can influence critical pollutant measurements. Marine engine manufacturers use chemical balance procedure of fuel, intake air and exhaust as required in §1065.655. These calculations for chemical balance involve a system of equations that require iteration. Engine manufacturers are required to guess the initial values of up to three quantities (i.e. water in measured flow, fraction of dilution air and exhaust, and the amount of products on a

C1 basis per dry mole of dry measured flow). Raw gas methods, direct sampling and discrete-mode testing are required in §1045.505 for use with outboard, personal watercraft and stern drive / inboard engines. EPA is proposing in § 1065.257 the use of Nondispersive Infrared Analyzers (NDIR) for determining emissions of N₂O. High quantities of Carbon Monoxide (CO) and to some extent Carbon Dioxide (CO₂) will significantly interfere with N₂O readings from NDIR equipment. There is a very small window of detection between N₂O and CO. The absorption of infrared radiation for wavelength detection of N₂O and CO is approximately 4.5 μm and 4.6 μm respectively. Even with very careful optimization of an optical band pass filter, CO will positively affect the N₂O readings. The ISO 21258 standard specifies the use of a CO to CO₂ converter to help minimize the effect of CO on N₂O. In addition there are no turn key stand alone N₂O NDIR analyzers currently available that have been demonstrated to work with direct sampling. Based on discussions with analyzer manufacturers, there are no available systems where the performance and accuracy can be guaranteed. Although we do not have data for N₂O emissions from marine engines we have reviewed data for handheld non-catalyzed equipment which indicates near non-detectable levels (~1.8x10⁻⁷ g/kW-hr) of N₂O in the engine exhaust. These raw gas readings would be in the parts per billion and unlikely to be detected by a standard NDIR analyzer. Even if the EPA decides that this significant testing burden be placed on the recreational marine industry and many of its small businesses the 2011 model year reporting requirement is not feasible. Testing equipment is currently not available and the technical challenges to develop this equipment along with the time it will take to install this new equipment and train staff would be considerable.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 21.

Commenter Name: Steven D. Meyers

Commenter Affiliation: General Electric Company (GE)

Document Control Number: EPA-HQ-OAR-2008-0508-0532.1

Comment Excerpt Number: 22

Comment: Locomotive and like-sized diesel marine engine GHG reporting should be limited to CO₂. Based on data contained in the EPA document "Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990 – 2007", in 2007, the combination of CH₄ and N₂O represented less than 1 % of the total rail-generated GHG emissions, of which locomotives are only a part. CO₂ is by far the greater GHG emission from locomotives. In addition, based on data from the same report, the rail contribution to the total CH₄ and N₂O inventory is approximately .02% and .1% respectively. Given the extremely small percentage of the total CH₄ and N₂O inventories represented by locomotive and like sized marine engines, GE believes that the incremental cost to instrument its large engine test cells to measure CH₄ and N₂O is not justified. GE estimates that the cost to outfit all of its test cells, which will likely be required to meet EPA's reporting requirements and GE's development needs, will be greater than \$500,000. Like other locomotive and marine engine manufacturers, GE is currently spending tens of millions of dollars to develop and field the recently promulgated Part 1033 locomotive upgrade kits. Furthermore, hundreds of millions of dollars will be spent to develop and implement solutions for the new Tier 3 and Tier 4 locomotive and marine engine emissions regulations. It does not make sense to impose additional costs for GHG reporting of minor constituents given the burden currently placed on the industry to achieve these other standards.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: John McKnight

Commenter Affiliation: National Marine Manufacturers Association (NMMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0344

Comment Excerpt Number: 2

Comment: EPA estimates that marine engine manufacturers would need to spend \$50,000 per test cell to upgrade measurement capabilities for CH₄ and \$20,000 per test cell for N₂O measurement capabilities, with an average annual reporting and recordkeeping cost of \$4,300 for marine SI engines and \$5,400 for marine CI engines. These costs are significantly underestimated based on engine manufacturer labor rates and equipment costs. NMMA estimates that with the additional expenses associated with dilution systems, software development and components that the total estimated cost to add nitrous oxide N₂O measurement capability to each existing test cell will cost between \$185,000 and \$225,000 per test cell. For methane CH₄ measurement capability, NMMA estimates that the cost for adding analyzing equipment and software development to each existing test cell will cost between \$45,000 and \$107,000. These expenses would be for the first test as additional expenses would be incurred for continuous testing, and represent the cost for modification of a single test cell. [See DCN: EPA-HQ-OAR-2008-0508-0344 for 2 tables providing details of equipment costs for measuring N₂O and CH₄.]

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Mark R. Riechers

Commenter Affiliation: Mercury Marine

Document Control Number: EPA-HQ-OAR-2008-0508-0643

Comment Excerpt Number: 4

Comment: EPA estimates that marine engine manufacturers would need to spend \$50,000 per test cell to upgrade measurement capabilities for CH₄ and \$20,000 per test cell for N₂O measurement capabilities, with an average annual reporting and recordkeeping cost of \$4,300 for marine SI engines and \$5,400 for marine CI engines. These costs are significantly underestimated based on engine manufacturer labor rates and equipment costs. Our estimates that with the additional expenses associated with dilution systems, software development and components that the total estimated cost to add nitrous oxide N₂O capability to one existing test cell to cost between \$200,000 and \$255,000 per test bench. For methane CH₄ capability, we estimate that the cost for adding analyzing equipment and software development to one existing test bench would cost between \$65,000 and \$125,000 for a total cost of \$265,000 to \$380,000 per test bench. This includes the substantial costs of having expensive professional assistance from the equipment manufacturers to integrate the new analyzers into our existing emissions benches. Since Mercury Marine operates 10 test benches for emissions testing, the total cost would be between \$2,650,000 and \$3,800,000. In addition, this comes at a time where we are having to make additional investments in our testing capabilities to comply with the new requirements of Part 1065 which will soon be required instead of testing to Part 91. With the extreme economic downturn, we are ill equipped to make these investments any time soon.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: John McKnight

Commenter Affiliation: National Marine Manufacturers Association (NMMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0344

Comment Excerpt Number: 1

Comment: NMMA members that would be directly affected by these new EPA requirements are the marine engine manufacturers whose products include spark ignited outboard, personal watercraft and stern drive and inboard engines. Compression ignition marine stern drive and inboard engines would also be required to report GHG emissions. Further, many of the marine inboard manufacturers are small businesses. Marine engine manufacturers that certify for exhaust emissions have an existing capability to measure CO₂, as measurement of CO₂ is required for calculation of regulated mass exhaust emission constituents. Additionally, the marine industry has been reporting CO₂ values derived from engine certification tests to the California Air Resources Board since 2008. Typical CO₂ emission values for marine engines range between 700 and 1250 g/kW-hr and can be easily measured with existing test equipment using conventional and well-proven analyzer technology. The NMMA strongly opposes EPA's proposal to require testing and reporting of nitrous oxide (N₂O) and methane (CH₄) due to the analytical challenges, the quantity of emissions and the significant cost. Alternatively, NMMA would support designated emission factors for N₂O and CH₄ which would allow marine engine manufacturers to report accurately estimated emissions values without incurring the exorbitant cost of having to measure emissions of these constituents. EPA is proposing in §1065.257 that N₂O analysis must be conducted in conjunction with diluted exhaust and batch sampling (bag sampling). Full-Flow Constant Volume Sampling Systems (CVS) or Partial Flow Sampling Systems (PFSS) are not trivial systems for recreational marine engines and products. Water is injected into exhaust systems of marine engines to keep components such as gear cases and propeller hubs cool. Large amounts of water vapor and steam are present in exhaust which can influence critical pollutant measurements. Marine engine manufacturers use chemical balance procedure of fuel, intake air and exhaust as required in §1065.655. These calculations for chemical balance involve a system of equations that require iteration. Engine manufacturers are required to guess the initial values of up to three quantities (i.e. water in measured flow, fraction of dilution air and exhaust, and the amount of products on a C1 basis per dry mole of dry measured flow). Raw gas methods, direct sampling and discrete-mode testing are required in §1045.505 for use with outboard, personal watercraft and stern drive / inboard engines. EPA is proposing in § 1065.257 the use of Nondispersive Infrared Analyzers (NDIR) for determining emissions of N₂O. High quantities of Carbon Monoxide (CO) and to some extent Carbon Dioxide (CO₂) will significantly interfere with N₂O readings from NDIR equipment. There is a very small window of detection between N₂O and CO. The absorption of infrared radiation for wavelength detection of N₂O and CO is approximately 4.5 μm and 4.6 μm respectively. Even with very careful optimization of an optical band pass filter, CO will positively affect the N₂O readings. The ISO 21258 standard specifies the use of a CO to CO₂ converter to help minimize the effect of CO on N₂O. In addition there are no turn key stand alone N₂O NDIR analyzers currently available that have been demonstrated to work with direct sampling. Based on discussions that NMMA members have had with equipment manufacturers there are no available systems where the performance and accuracy can be guaranteed. Although NMMA does not have data for N₂O emissions from marine engines we have reviewed data for handheld non-catalyzed equipment which indicates near non-detectable levels (~1.8x10⁻⁷ g/kW-hr) of N₂O in the engine exhaust. These raw gas readings would be in the parts per billion and unlikely to be detected by a standard NDIR analyzer. Even if the EPA decides that this significant testing burden be placed on the recreational marine industry and many of its small businesses, the 2011 model year reporting requirement is not feasible. Some manufacturers will begin pre-production and certification with MY 2011 product as soon as October 2009. Testing equipment to measure

N₂O is currently not available and development of this equipment poses significant design challenges. Even assuming that the test equipment were available from a basic design perspective, actually conducting tests with this equipment would require considerable lead time for the test equipment to be manufactured, installed and validated.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpts 1 and 21.

8. SNOWMOBILES, ATVS, OFF-HIGHWAY MOTORCYCLES, AND ON-HIGHWAY MOTORCYCLES

Commenter Name: Edward Klim

Commenter Affiliation: International Snowmobile Manufacturers Association (ISMA)

Document Control Number: EPA-HQ-OAR-2008-0508-1746

Comment Excerpt Number: 4

Comment: There is an extreme timing issue that was not addressed in the Agency's proposal. If every company required to report GHG, were to write a purchase order for a Methane analyzer and a Nitrous Oxide analyzer, it is inconceivable that the few analytical equipment producers would be able to supply all of these companies by 2011. In addition there will be the normal time for learning a new piece of equipment and verifying that the numbers are actually good data. Furthermore, some production of MY 2011 will begin in the first half of 2010. Therefore it is obvious that even if measuring CH₄ and N₂O were economically justified, it would not be technically achievable for every company until sometime in the future. We believe the Agency should prioritize the sources required to measure these constituents based on the current CO₂ inventory estimates, and allow a factor-based approach for other categories until the need and equipment availability questions have been resolved.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Edward Klim

Commenter Affiliation: International Snowmobile Manufacturers Association (ISMA)

Document Control Number: EPA-HQ-OAR-2008-0508-1746

Comment Excerpt Number: 1

Comment: CO₂ is not a regulated constituent by either EPA or CARB. CO₂ emission concentrations, however, are measured along with the regulated constituents as part of the engine-based Taw gas fuel flow method used by the ISMA members to determine emissions. There is then no stand-alone measurement for CO₂. A caveat must be made as there is not a specified test, procedure, for measuring and reporting CO₂ emissions. We would also like to point out that, snowmobile emissions of HC and CO are reported in units of g/kW-hr, and we would propose that same format for CO₂. Our supportive comments on CO₂ measurement and reporting are offered in this context.

Response: The final rule uses the same units for GHGs as for criteria pollutants, as the commenter suggests.

Commenter Name: Edward Klim

Commenter Affiliation: International Snowmobile Manufacturers Association (ISMA)

Document Control Number: EPA-HQ-OAR-2008-0508-1746

Comment Excerpt Number: 2

Comment: Methane and Nitrous Oxide are constituents that should not be required to be measured by the snowmobile industry, based on the minimal source contribution of these constituents to the nation's GHG inventory. Unlike CO₂, the snowmobile manufacturers do not measure methane and nitrous oxide as part of our current emission requirements. It would be very costly to add these analyzers, for extremely minimal incremental benefit to the accuracy of the GHG emissions inventory. The snowmobile industry has been affected much like every other industry in the United States. It is not an exaggeration to state that the money to purchase the analyzers and related equipment will come from 2-3 people losing their jobs.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Edward Klim

Commenter Affiliation: International Snowmobile Manufacturers Association (ISMA)

Document Control Number: EPA-HQ-OAR-2008-0508-1746

Comment Excerpt Number: 3

Comment: The phase 3 snowmobile HC and CO requirements in 40 CFR 1051.103 are effective for 2012. The efforts to meet these requirements should not be hindered by a new requirement to measure N₂O and CH₄. According to the IPCC, of the total GHG produced by an engine, N₂O contribution is estimated at 2-3% and CH₄ is estimated at 1%. It is in the best interest of the environment to allow this small industry's limited resources to remain focused on the required reduction of HC and CO emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Edward Klim

Commenter Affiliation: International Snowmobile Manufacturers Association (ISMA)

Document Control Number: EPA-HQ-OAR-2008-0508-1746

Comment Excerpt Number: 5

Comment: Snowmobiles, which are used only in northern areas and for only a portion of the year, are grouped in with many other non-road mobile sources that are used nation wide and year round. Only then is this aggregated non-road group large enough to show even a very small contribution to total GHG emissions. Snowmobiles contribute just a fraction of that amount. Snowmobiles should not be grouped in a category required to measure CH₄ and N₂O emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: None

Commenter Affiliation: Motorcycle Industry Council, Inc. (MIC)

Document Control Number: EPA-HQ-OAR-2008-0508-0589.1

Comment Excerpt Number: 6

Comment: Revise proposed new section 1051.235(i) to read as follows: (i) Starting in the 2011 model year, report CO₂, N₂O, and CH₄ with each low-hour certification test using the procedures specified in 40 CFR part 1065. Default emission factors approved by the Administrator for N₂O and CH₄ may be used in lieu of measured values. Small-volume manufacturers may omit this requirement. Use the same units and modal calculations as for your other results to report a single weighted value for each constituent. Round the final values as follows: Round CO₂ to the nearest 1 g/kW-hr or 1 g/km, as appropriate. Round N₂O to the nearest 0.001 g/kW-hr or 0.001 g/km, as appropriate. (3) Round CH₄ to the nearest 0.001 g/kW-hr or 0.001 g/km, as appropriate.

Response: Under this final rule, EPA will not be involved in setting default emission factors, but will allow manufacturers that choose to omit testing to submit appropriate alternative data. See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: None

Commenter Affiliation: Motorcycle Industry Council, Inc. (MIC)

Document Control Number: EPA-HQ-OAR-2008-0508-0589.1

Comment Excerpt Number: 5

Comment: For off-highway motorcycles and ATVs, revise §1051.205(p)(2) to read as follows: (2) Starting in the 2011 model year, report measured CO₂, N₂O, and CH₄ as described in §1051.235. Small-volume manufacturers may omit this requirement.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: None

Commenter Affiliation: Motorcycle Industry Council, Inc. (MIC)

Document Control Number: EPA-HQ-OAR-2008-0508-0589.1

Comment Excerpt Number: 3

Comment: It should be noted that the test procedure used for off-road motorcycles and ATVs was developed over 30 years ago to represent the operation of the smallest class of on-road motorcycles. It does not accurately represent the operation of off-road motorcycles and ATVs. The uncertainty in GHG emissions introduced by this unrepresentative test procedure is significant, unlike the insignificant uncertainty associated with not measuring methane or nitrous oxide. The activity factors EPA is using for off-road motorcycles and ATVs are another source of uncertainty. Resources would be better spent resolving some of these significant uncertainties than measuring methane and nitrous oxide. MIC would be please to work with EPA in reducing these uncertainties.

Response: EPA considers the accuracy of GHG data using existing test procedures to be sufficient for the purposes of this reporting rule. If and when EPA pursues GHG emission standards for these engines, we would expect to consider test procedure changes such as the commenter suggests.

Commenter Name: Tom Austin
Commenter Affiliation: Sierra Research
Document Control Number: EPA-HQ-OAR-2008-0508-0228i
Comment Excerpt Number: 5

Comment: I understand this is all about accuracy in the inventory. As written, we would end up having to install new equipment to measure what are literally trace emissions from these sources by using a test procedure developed over 30 years ago to represent the way small highway motorcycles are driven. So for off-road motorcycles and ATVs we're measuring nitrous oxide emissions using this test procedure that doesn't in any way represent the way these vehicles are actually being operated. The errors in the inventory are primarily related to problems with test procedure not being representative to problems with the activity data that are in EPA's model right now. MIC has tried to collect better data on activity, and there's big issues like that related to inventory accuracy that we are happy to work with agency on correcting. But when it comes to measuring the trace gases, we are positive this is not going to have any meaningful effect on the accuracy of the overall inventory. Be happy to answer any questions you have.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: None
Commenter Affiliation: Motorcycle Industry Council, Inc. (MIC)
Document Control Number: EPA-HQ-OAR-2008-0508-0589.1
Comment Excerpt Number: 2

Comment: Another concern with the proposal is that there is inadequate lead time. Member companies are testing 2011 models this year and some will in production with MY 2011 as early as May 2010. It is already too late to incorporate CH₄ and N₂O without delaying the introduction of 2011 models. To the extent that the increased demand for CH₄ and N₂O analyzers resulting from the regulation causes delays in obtaining the analyzers, the required lead time is further increased.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Scott Armiger
Commenter Affiliation: Harley-Davidson Motor Company
Document Control Number: EPA-HQ-OAR-2008-0508-1565
Comment Excerpt Number: 3

Comment: Harley-Davidson also has a concern regarding EPA's suggestion that "additional opportunities" may exist for further reductions based on more precise Controls and optimization. EPA appears to recognize that many, if no tall, of the cost-effective measures EPA has identified have already been considered and incorporated where applicable. For instance, Harley-Davidson has already employed oxygen sensors and three-way catalysts in order to meet the existing EPA and CARB Tier II standards, which commence in CY 2009 for the EPA Tier 11 segment.

Response: This reporting rule does not introduce GHG emissions standards. We will need to fully address any concerns about improvements in emissions performance if and when we pursue such standards.

Commenter Name: Scott Armiger

Commenter Affiliation: Harley-Davidson Motor Company

Document Control Number: EPA-HQ-OAR-2008-0508-1565

Comment Excerpt Number: 2

Comment: The reporting requirements that EPA is suggesting for CO₂, N₂O and CH₄ would be performed within the annual certification process in accordance with 40 U.S. CFR Part 86 for on-highway motorcycles. While we do not oppose this reporting process per se, understanding the agency's need for additional information on GHG emissions, this could come at some considerable cost to manufacturers. Currently motorcycles measure NOX (gm/km) as part of the HC+ NOX standards associated with 40 CFR Part 86. However, this measurement is for nitrous oxides compounds collectively, and not for N₂O specifically. If it is EPA's intention to specifically measure N₂O for motorcycles, it is our understanding that the analysis equipment does not exist within the mobile source arena to readily perform this task. Many years of development, at great expense, may be required to translate technologies and methods of measurement associated with stationary sources to the mobile source arena. We desire to clarify with EPA if this is truly their intention with respect to an individual measurement of N₂O. Motorcycles are a unique category of GHG emissions source. Motorcycles have characteristics very different from those of industrial sources, or even from other motor vehicles such as passenger cars, Heavy duty trucks and off-road motor vehicles. As EPA well noted in the ANPR associated to this NPRM, the motorcycle category is comprised of a wide variety of vehicles, yet accounts for a tiny fraction of the overall global and national GHG emissions inventory. For example, California Air Resources Board IPCC Greenhouse gas inventories for 2004 CY estimate that on-highway motorcycles may emit as little as .4% of the CO₂ produced by gasoline fueled mobile sources. EPA's recent Inventory Of Greenhouse Gas Emissions and Sinks (2009) also documents that of all mobile sources, motorcycles are by far the smallest contributor of CO₂ in the United States. EPA's data also notes that over the time period of 1990 to 2007, motorcycle CO₂ production increased by a modest 8% in comparison to other mobile sources. In many regions of the United States, motorcycles are driven on a "part-time" basis with many traveling only a fraction of the vehicle miles of a typical car or truck, and most of those miles are traveled in recreational use. EPA correctly noted in the ANPR that many motorcycles boast an average fuel efficiency of 50 miles per gallon -roughly twice as efficient as an average passenger car when considering a single occupant -and therefore are an efficient means of combusting carbon based fuels. These existing efficiencies and emissions characteristics, together with the very limited physical space available on a motorcycle, make it extremely difficult and costly to obtain meaningful GHG emissions reductions from motorcycles as a class. Unlike trucks and passenger cars, motorcycles do not have sufficient space on the vehicle for extensive add-on emissions control devices. Imposing additional GHG reduction requirements on motorcycles that may require add-on controls not only create physical installation issues, but could also raise potential driveability and safety issues. Even a GHG standard that did not mandate add-on emissions control, such as fuel use regulations and the methodologies to comply with them, could raise similar issues. For example, the relationship between vehicle weight and potential emissions are a particular concern for manufacturers of larger displacement motorcycles such as Harley-Davidson. The marginal potential emissions benefits associated with weight reductions associated to some types of GHG regulations could have a direct and significant negative impact on the core attributes of our motorcycles. Also, motorcycles are a unique class of GHG source because, unlike many other sources, a more tenuous balance exists between the reduction of CO₂ emissions and the emissions of criteria pollutants such as NO_x, HC and CO. As EPA knows,

many of the current emissions reduction technologies for motorcycles are based on the conversion of fuel and criteria emissions to CO₂ and water vapor. Therefore we are concerned about any manner in which EPA might fix standards for CO₂(gm/km) in the future based upon the information obtained via the reporting requirements of this NPRM. In short, achieving any significant additional reduction of CO₂ from motorcycles would be very difficult without potentially increasing other pollutants already regulated by the Clean Air Act. For these reasons, Harley-Davidson believes that requiring targeted tailpipe GHG emissions limits for motorcycles as a class is unlikely to result in an appreciable impact in reducing overall GHG emissions, or in meaningfully addressing climate change. While EPA expressed in their recent Proposed Endangerment and Cause for Greenhouse Gases Under Section 202 (a) of The Clean Air Act (1009) a desire to regulate all mobile sources in an egalitarian manner, we believe that motorcycles should be evaluated further from a cost/benefit standpoint in relation to future GHG standards.

Response: This reporting rule does not introduce GHG emissions standards. We will need to fully address any concerns about improvements in emissions performance if and when we pursue such standards. See also the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Tom Austin

Commenter Affiliation: Sierra Research

Document Control Number: EPA-HQ-OAR-2008-0508-0228i

Comment Excerpt Number: 4

Comment: One of the other concerns we have is lead time. As we understand the way the proposed rule is drafted, it would first apply to 2011 model year. Our member companies are already testing 2011 model year motorcycles. So we have some serious issues with respect to being able to comply with the 2011 model year if we have to have measurements for methane and nitrous oxide for all the vehicles going through the certification process currently.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: None

Commenter Affiliation: Motorcycle Industry Council, Inc. (MIC)

Document Control Number: EPA-HQ-OAR-2008-0508-0589.1

Comment Excerpt Number: 4

Comment: For highway motorcycles, revise proposed subsection (e) §86.431-78 (Data submission) to read as follows: (e) Starting in the 2011 model year, report CO₂, N₂O, and CH₄ with each zero kilometer certification test (if one is conducted) and with each test conducted at the applicable minimum test distance as defined in §86.427-78. Use the procedures specified in 40 CFR part 1065 as needed to measure N₂O, and CH₄ or use default emission factors approved by the Administrator for N₂O and CH₄ in lieu of measured values. Report these values in your application for certification. Small-volume manufacturers (as defined in §86.410-2006(e)) may omit this requirement. Use the same measurement methods as for your other results to report a single value for CO₂, N₂O, and CH₄. Round the final values as follows: Round CO₂ to the nearest 1 g/km. Round N₂O to the nearest 0.001 g/km. (3) Round CH₄ to the nearest 0.001g/km.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: None

Commenter Affiliation: Motorcycle Industry Council, Inc. (MIC)

Document Control Number: EPA-HQ-OAR-2008-0508-0589.1

Comment Excerpt Number: 1

Comment: Our primary concern with the proposal is the requirement that methane and nitrous oxide emissions be measured from vehicles and engines not subject to non-methane hydrocarbon standards. The Regulatory Impact Analysis justifies methane (CH₄) and nitrous oxide (N₂O) measurement instead of “default emission factors” based on the claim that the “average uncertainty” of greenhouse gas (GHG) emissions reported will be reduced from 19.7% to 9.4%. However, our more detailed analysis for motorcycles and ATVs demonstrates that there is much less uncertainty associated with using default emission factors for CH₄ and N₂O for these vehicles, at least with respect to the fraction of GHG that is CH₄ or N₂O. Without the ability to use default emission factors, the costs of the proposed regulation are disproportionately high for manufacturers of motorcycles and ATVs. The cost of actually measuring CH₄ and N₂O from motorcycles and ATVs can be avoided without any significant effect on the accuracy of the GHG emissions inventory data EPA is seeking. CH₄ and N₂O from motorcycles and ATVs are only about one one-hundredth of one percent (0.01%) of GHG emissions from mobile sources. The cost of adding CH₄ and N₂O measurement can be avoided without any meaningful loss in accuracy of the GHG inventory because CH₄ and N₂O emissions are small to begin with and they can be estimated with reasonable accuracy from previously published test results. [See DCN: EPA-HQ-OAR-2008-0508-0589.1 for Table illustrating GHG emissions from a passenger car that just meets the 27.5 mpg CAFÉ standard.] The CH₄ and N₂O emissions estimates are from the California Air Resources Board (CARB). When emissions related to air conditioning are excluded, CO₂ emissions account for 99.997% of the total GHG emissions on a mass basis and 99.414% of the GHG emissions on a CO₂-equivalent basis. [Footnote: CH₄ and N₂O emissions are converted to a CO₂-equivalent basis by multiplying by the global warming potential (GWP) factors of 23 for CH₄ and 296 for N₂O. (The GWP represents the heat trapping potential of each particular compound relative to carbon dioxide.) The effect of CH₄ and N₂O on GHG emissions is small. That is why the GHG regulation adopted by CARB did not require light-duty vehicle manufacturers to measure N₂O; use of an estimated emissions rate was considered sufficient. As explained below, estimated CH₄ and N₂O emissions would also be sufficient for motorcycles and off-highway recreational vehicles. Table 2 provides estimates of GHG emissions from motorcycles contained in a report prepared for EPA under contract. [See DCN: EPA-HQ-OAR-2008-0508-0589.1 for table showing Estimates of Greenhouse Gas Emissions for a Non-Catalyst Motorcycle Based on 2004 ICF Report for EPA from “Update of Methane and Nitrous Oxide Emission Factors for On-Highway Vehicles,” ICF Consulting, Report No. EPA420-P-04-016, November 2004.] As shown in the table, CO₂ is 99% of GHG emissions on a CO₂-equivalent basis. However, there are problems with the estimates presented in Table 2. Ignoring the small effect of HC and CO emissions, the 354 g/mi CO₂ emission rate translates to 25 mpg fuel economy. This is at the bottom end of the spectrum for motorcycles tested using the “city” driving cycle incorporated in the Federal Test Procedure. A more representative average fuel economy level is the 50 mpg assumed in EPA’s MOBILE6 emissions model. In addition, the CH₄ and N₂O estimates shown in the table are for a non-catalyst motorcycle. Under the 2010 federal standards, the majority of highway motorcycles will be equipped with catalysts. Table 3 shows estimates of GHG emissions from non-catalyst motorcycles with the CO₂ emissions rate adjusted to the equivalent of 50 mpg (177 g/mi). . [See DCN: EPA-HQ-OAR-2008-0508-0589.1 for table.] On a CO₂-equivalent basis, CO₂ emissions

are still 98% of the total. The methane emissions factor is consistent with a large body of data showing that methane emissions are typically about 5% of total hydrocarbon emissions for non-catalyst gasoline vehicles. (EPA certification data indicate average HC emissions of 1 to 2 g/mi are typical for late model motorcycles certified without catalysts.) As described in the above-referenced ICF report, the N₂O emission factor is representative of non-catalyst gasoline vehicles. It is apparent that errors in the CH₄ and N₂O estimates shown in Table 3 of 100% would introduce an error in CO₂-equivalent emissions of only 2%. Table 4 shows our estimates of GHG emissions for catalyst-equipped motorcycles. CH₄ emissions are based on the reported total hydrocarbon (THC) emissions for catalyst equipped motorcycles in the certification test results on EPA's website. . [See DCN: EPA-HQ-OAR-2008-0508-0589.1 for table.] Average THC emissions of 0.35 g/km (0.56 g/mi) were assumed to have a CH₄ content of 10% (which is approximately two-thirds of the methane fraction for catalyst-equipped gasoline-fueled vehicles that use catalysts that are more efficient in reducing non-methane HC). The N₂O emission rate has been estimated at 0.012 g/mi, which is FTP estimate for low emission vehicle passenger cars in the above-referenced ICF report for EPA. Since NO_x emissions are primarily formed during warm-up operation from NO emissions, motorcycles are expected to have no higher N₂O emissions than low emission passenger cars because of the extremely low engine-out NO emissions produced by motorcycles.[T. Huai, et al., "Estimates of the emission rates of nitrous oxide from light-duty vehicles using different chassis dynamometer test cycles," Atmospheric Environment 38 (2004) 6621-6629.] As in the case of non-catalyst motorcycles, large errors in the estimated CH₄ and N₂O emissions would have a relatively small effect on the accuracy of total CO₂-equivalent emissions for catalyst-equipped motorcycles because of the dominance of CO₂. Considering that motorcycles and ATVs are currently estimated to represent less than 0.3% of mobile source GHG emissions, the estimates presented in Tables 3 and 4 indicate that CH₄ and N₂O emissions from these vehicles are no more than 0.01% of mobile source emissions. As a result, there is no practical benefit associated with requiring CH₄ and N₂O measurement for vehicles and engines certified to THC standards.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Tom Austin

Commenter Affiliation: Sierra Research

Document Control Number: EPA-HQ-OAR-2008-0508-0228i

Comment Excerpt Number: 3

Comment: We are interested in knowing whether EPA will consider changes to the proposed rule that allow for the use of default emission factors approved by the Administrator at least in certain cases. For example, the California Air Resources Board staff has estimated that methane and nitrous oxides make up less than 1 percent of the exhaust emissions from light duty vehicles on a CO₂ equivalent basis. Our preliminary analysis indicates that a similar situation exists for motorcycles and ATVs. The uncertainty associated with not precisely measuring methane and nitrous oxide is not significant for these sources. So to reiterate, our basic question is whether the agency will entertain a revision to the proposed rule that allows for default emission factors in cases where it can be demonstrated that the methane and N₂O are clearly not a significant fraction of the total greenhouse gas emissions.

Response: Under this final rule, EPA will not be involved in setting default emission factors, but will allow manufacturers that choose to omit testing to submit appropriate alternative data. See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Tom Austin
Commenter Affiliation: Sierra Research
Document Control Number: EPA-HQ-OAR-2008-0508-0228i
Comment Excerpt Number: 2

Comment: The cost of measuring methane and nitrous oxide from motorcycles and ATVs can be avoided without any significant effect on the accuracy of greenhouse gas inventory that EPA is seeking.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Tom Austin
Commenter Affiliation: Sierra Research
Document Control Number: EPA-HQ-OAR-2008-0508-0228i
Comment Excerpt Number: 1

Comment: Our primary concern with the proposal is the requirement that methane and nitrous oxide emissions be measured from vehicles and engines that are not subject to non-methane hydrocarbon standards. The regulatory impact analysis justifies methane and nitrous oxide measurement instead of the use of what are called default emission factors based on an estimated reduction in the average uncertainty of reported greenhouse gas emissions from 19.7 percent to 9.4 percent. This level of uncertainty does not exist for motorcycles and ATVs, at least with respect to the fraction of greenhouse gases that are made up of methane and nitrous oxide.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

9. AIRCRAFT ENGINES

Commenter Name: Laurie Burt
Commenter Affiliation: Massachusetts Department of Environmental Protection
Document Control Number: EPA-HQ-OAR-2008-0508-0453.1
Comment Excerpt Number: 21

Comment: Massachusetts suggests that EPA provide justification for not requiring aircraft engine manufacturers to report CO₂, CH₄, and NO_x emissions for engines rated at less than 26.7 kilonewtons. Massachusetts believes that the exclusion of the lower rated engines would result in the under-reporting of CO₂, CH₄, and NO_x emissions for the aircraft sector due to the increasing use of smaller aircraft for intercity commuting. Although turboprop and turboshaft engines are not required to report criteria pollutants (under 40 CFR 87) and EPA does not require manufacturers of piston engines to report criteria air pollutants, Massachusetts recommends that EPA require engine manufacturers for these types of engines to report their emissions. Including these smaller engines (thrust less than 26.7 kilonewtons and turboprop, turboshaft, and piston engines) will provide an important incentive for their manufacturers to produce more efficient and cleaner engines.

Response: As proposed, since test procedures are not established for these aircraft engines and

manufacturers would need to acquire/construct new or different test stands and related test instruments (if they do not already have such equipment), we are not finalizing any GHG reporting requirements for these engines.

Commenter Name: Steven D. Meyers

Commenter Affiliation: General Electric Company (GE)

Document Control Number: EPA-HQ-OAR-2008-0508-0532.1

Comment Excerpt Number: 25

Comment: According to the proposal, manufacturers of turbofan and turbojet engines with rated output greater than 26.7 kilonewtons will be required to record and report CO₂ separately for each mode of the landing and takeoff (LTO) cycle used in the emission certification test, as well as for the entire landing and takeoff cycle. GE believes that EPA's proposal to require more detailed reporting of CO₂ emissions from the components of the LTO cycle is acceptable as long as existing methodologies for CO₂ calculation are retained. Specifically, EPA's proposal should entail minimal burden as long as the reported CO₂ is calculated using the engine fuel flow for the Reference Engine per ICAO Annex 16, Vol. II multiplied by the CO₂ emission index based on fuel analysis.

Response: We determined that calculating aircraft engine CO₂ emissions from fuel mass rate flow measurements is an appropriate method for reporting CO₂ emissions. Therefore, for turbofan and turbojet engines of rated output greater than 26.7 kilonewtons, we are finalizing that beginning in 2011 manufactures record and report CO₂ separately for each mode of the LTO cycle used in the certification test, as well as the entire LTO, by calculations of CO₂ from fuel mass rate flow measurements (utilizing the fuel mass rate flow for an engine according to ICAO Annex 16, Volume II) or alternatively according to the existing measurement criteria for CO₂. We believe that a comprehensive and consistent reporting of LTO CO₂ emissions, along with knowledge of aircraft aerodynamic performance, will support modeling of full-flight CO₂ emissions and help us to better understand overall contributions to global warming from aircraft operations. Also, the reporting requirements will apply not just to engines introduced in that year, but for all engines still in production.

Commenter Name: Alan Lloyd

Commenter Affiliation: International Council on Clean Transportation (ICCT)

Document Control Number: EPA-HQ-OAR-2008-0508-0697.1

Comment Excerpt Number: 2

Comment: As EPA has noted, aviation is an important source of GHG emissions that should be covered under mandatory reporting requirements. EPA estimates that US aviation (domestic flights and international outbound flights) accounted for over 200 MMT of carbon dioxide equivalent (CO₂-eq) emissions in 2006, or 10 percent of the national transportation inventory including international bunker fuels [footnote: US EPA. Inventory of US Greenhouse Gas Emissions and Sinks: 1990-2006. April 2008], and approximately 35 percent of the worldwide aviation total in 2004 according to the Federal Aviation Administration's SAGE model. [footnote: FAA. SAGE Version 1.5 – Global Aviation Emissions Inventories for 2000 through 2004. September 2005] Aircraft represent a concentrated source of emissions comparable to moderately sized stationary sources and as such should be subject to EPA's reporting

requirements. A fully loaded long-range aircraft, operating to maximize range and efficiency, emits on average a metric ton of CO₂ in under 3 minutes on mid to long-range missions. [footnote: Boeing 777-200ER under ICCT analysis using PIANO-X model. Further information available at www.lissys.demon.co.uk/PianoX.html.] These figures strongly suggest a need for EPA to collect emissions data from aviation manufacturers on a mandatory basis. Mandatory reporting requirements for manufacturers are a crucial step toward understanding and mitigating the emissions of climate pollutants from aviation. International efforts to protect the global climate in particular have been hampered by a lack of reliable and reproducible data. The International Aviation Organization's (ICAO) Group on International Aviation and Climate Change (GIACC), which is charged with preparing an action plan for aviation GHGs for presentation to the COP- 15 meeting in Copenhagen, has struggled with this lack of data and has requested "Contracting States to report annually to ICAO, in an agreed format, data on fuel consumption and traffic in accordance with Article 67 of the Chicago Convention. [footnote: Group on International Aviation and Climate Change (GIACC) Draft Final Report. 1 June 2009. Accessible online at http://www.icao.int/env/meetings/2009/GIACC_4/GIACC_4.html.] EPA's proposed rule is wholly consistent with this recommendation and would further coordinated actions to mitigate domestic and international GHG emissions by encouraging similar activities by other ICAO contracting states.

Response: For turbofan and turbojet engines of rated output greater than 26.7 kilonewtons, we are finalizing that beginning in 2011 manufactures record and report CO₂ separately for each mode of the LTO cycle used in the certification test, as well as the entire LTO. Also, the reporting requirements will apply not just to engines introduced in that year, but for all engines still in production.

Commenter Name: Alan Lloyd

Commenter Affiliation: International Council on Clean Transportation (ICCT)

Document Control Number: EPA-HQ-OAR-2008-0508-0697.1

Comment Excerpt Number: 7

Comment: As EPA has noted, turbofan and turbojet engines with a rated thrust below 26.7 kilonewtons, along with turboprop and turboshaft engines, are not currently required to report emissions for certification purposes, nor are they subject to standard limit values. Although aircraft utilizing these engines are likely to contribute only modestly to today's inventories, the growth of general aviation, combined with the need for developed countries to reduce emissions on the order of 80% from current levels by 2050, means that this relative contribution could grow substantially in future decades should general aviation continue to be unregulated. On balance, we believe that the benefits of requiring emissions reporting from significant manufacturers of general aviation aircraft and aircraft engines outweighs the small burden imposed by collecting and submitting data.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-0453.1 and excerpt number 21.

Commenter Name: Alan H. Epstein

Commenter Affiliation: United Technologies Corporation (UTC)

Document Control Number: EPA-HQ-OAR-2008-0508-0570.1

Comment Excerpt Number: 3

Comment: As noted in the proposed rulemaking, turbofan and turbojet engines of less than 26.7 kN thrust, and turboshaft and turboshaft engines, are not now regulated under 40 CFR 87. The technical standards for such regulation - including definition of appropriate LTO cycles and measurement procedures - have not been established for these engine types. Our experience suggests that 2-3 years would be necessary for the ICAO process to define such standards and procedures. There are several technical reasons why current standards and procedures must be modified to reflect the differences in engines operation, size, and type. For example, the takeoff and landing patterns of helicopters and small turboprops may be quite different than those of large airliners. In addition, different certification test stands are used for these classes of engine. These stands are not now equipped to make such emissions measurements.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-0453.1 and excerpt number 21.

Commenter Name: Nancy N. Young

Commenter Affiliation: Air Transport Association of America, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0522.1

Comment Excerpt Number: 10

Comment: EPA has requested comment on a reporting program for commercial aircraft GHG emissions, including whether CO₂ is the most appropriate focus of the GHG reporting to be addressed by such a program. 74 Fed. Reg. at 16,591. ATA submits that, in fact, the most accurate, reasonable and appropriate approach to reporting aircraft GHG emissions is to focus solely on CO₂. As the Preamble to the Proposed Reporting Rule correctly concludes, no significant N₂O or methane emissions are formed in modern gas turbine engines. Nor do aircraft engine emissions produce any of the other direct GHGs that are subject to the Proposed Reporting Rule. Accordingly EPA should not require measurement or reporting of them. Moreover, as discussed below, there is a direct relationship between jet fuel burn and CO₂ emissions to which established metrics and conversion ratios, already recognized under existing national and international reporting schemes, can be applied to provide a range of accurate, reliable and readily reportable downstream CO₂ emissions data.

Response: For CO₂, see response to comments for document control number EPA-HQ-OAR-2008-0508-0532.1 and excerpt number 25. As proposed, we are not requiring N₂O reporting from aircraft engines. We are not finalizing our proposed requirement that manufacturers measure and report CH₄, as we discovered that aircraft jet turbine engines have been shown to consume CH₄ from the ambient air during the dominant operating modes.¹

Commenter Name: Alan Lloyd

Commenter Affiliation: International Council on Clean Transportation (ICCT)

Document Control Number: EPA-HQ-OAR-2008-0508-0697.1

Comment Excerpt Number: 3

Comment: In addition to data on CO₂, EPA reporting requirements should cover emissions of

¹ Aerodyne, Rich Miake-Lye, AAFEX Methane presentation at the Seventh Meeting of Primary Contributors for the Aviation Emissions Characterization Roadmap, June 9-10, 2009 (*Aircraft Methane Emissions in AAFEX Measurement Campaign*).

both nitrogen oxides (NO_x) and particulate matter (PM) from aircraft and aircraft engines. While considerable uncertainty remains, the preponderance of the scientific evidence suggests that aircraft NO_x has a net warming impact via its impact on upper tropospheric ozone, particularly in the Northern Hemisphere and over shorter (20 year) timescales. Aircraft PM emissions are likewise under scrutiny due to their possible promotion of aviation induced cloudiness. [footnote: Lee et.al. Aviation and global climate change in the 21st century. Atmos. Env. Accepted for publication April 2009.] An EPA mandatory reporting requirement for NO_x and PM (most likely PM with an aerodynamic diameter less than 2.5 micrometers, or PM_{2.5}) will be invaluable to developing the data needed to support regulatory action on these pollutants if and when the scientific basis for action becomes sufficiently compelling.

Response: In today's rule, we are requiring that engine manufacturers of turbofan and turbojet engines of rated output greater than 26.7 kilonewtons record and report NO_x emissions in the four LTO test modes and for the overall LTO cycle. As discussed in the proposal and earlier in today's final rule, NO_x from aircraft have been shown to make a potential contribution to climate change, and within the mobile source sector, NO_x is a climate change gas unique to aviation. As required in 40 CFR 87, manufacturers must already measure and record NO_x emissions in each of the four LTO test modes in order to comply with the LTO NO_x emission standard (for the entire LTO cycle). This data is now not reported to EPA for public consideration as is the case with all other mobile sources. Manufacturers voluntarily report the data to ICAO, but there is no assurance that EPA will receive this information. Likewise, the information provided to FAA is not readily accessible to EPA, and it is not of the detail provided to ICAO. Comprehensive and consistent reporting of LTO NO_x emissions rate data will support modeling of overall NO_x emissions from aircraft engines and help us to better understand overall contributions to global warming from aircraft operations.

In regard to particulate matter (PM), currently there are no measurement and test procedures in 40 CFR 87 for PM emissions from aircraft engines, and thus, we are not finalizing any reporting requirements for this pollutant. If in the future we adopt and implement a PM standard for aircraft engines, we would subsequently intend to consider PM reporting requirements in the context of section 231 of the Clean Air Act.

Commenter Name: Alan Lloyd

Commenter Affiliation: International Council on Clean Transportation (ICCT)

Document Control Number: EPA-HQ-OAR-2008-0508-0697.1

Comment Excerpt Number: 4

Comment: While we support EPA's proposal that aircraft engine emissions be reported for both a simulated landing and takeoff (LTO) cycle and its four component modes, from a climate perspective it is even more important to collect information on cruise emissions occurring above the atmospheric mixing height (3000 ft). EPA does not currently require engine manufacturers to report CO₂ emissions outside of LTO, and as such has access to little information about the ninety-plus percent of aviation CO₂ emitted during cruise. There are likewise no reporting requirements of any kind for NO_x or PM emissions above 3000 ft. It is critical that EPA begin collecting and monitoring this data and as a result we strongly recommend that cruise emissions be included under EPA's mandatory reporting requirements. The complexity of extrapolating engine specific fuel consumption and criteria pollutant emissions at sea level to aircraft cruise emissions suggests that data for individual aircraft models should be collected directly by including airframe manufacturers under EPA's mandatory reporting requirements.

Response: The current LTO test procedures in 40 CFR part 87 include engine thrust levels above and below the cruise thrust level, and thus, they may provide some idea of cruise emissions. However, the existing test procedures do not directly address cruise emissions at altitude. Globally, 93 percent of the fuel burn (a surrogate for CO₂) and 92 percent of NO_x emissions from commercial aircraft occur outside of the basic LTO cycle (i.e., operations nominally above 3,000 feet).² EPA has received two petitions to reduce GHG emissions from aircraft. The first petition was submitted on December 4, 2007, by California, Connecticut, New Jersey, New Mexico, Pennsylvania's Department of Environmental Protection, the City of New York, the District of Columbia, and the South Coast Air Quality Management District. A second petition was filed on December 31, 2007, by Earthjustice on behalf of four environmental organizations: Friends of the Earth, Oceana, Center for Biological Diversity, and Natural Resources Defense Council. Petitioners request that EPA exercise its authority under section 231(a) of the Clean Air Act to regulate GHG emissions from new and existing aircraft and/or aircraft engine operations, after finding that aircraft GHG emissions cause or contribute to air pollution which may reasonably be anticipated to endanger public health or welfare. In the future, a response to the petitions would potentially consider requirements for cruise emissions. Such requirements could include elements related to the aircraft engine and the aircraft, and thus both engine and airframe manufacturers may be covered by potential future regulations.

Commenter Name: Alan Lloyd

Commenter Affiliation: International Council on Clean Transportation (ICCT)

Document Control Number: EPA-HQ-OAR-2008-0508-0697.1

Comment Excerpt Number: 5

Comment: The ideal units of reporting will likely vary by trip segment and pollutant. LTO CO₂ can currently be estimated from engine certification data on the basis of fuel flow (kg/s) and total fuel use (kg by LTO cycle), while NO_x is reported as a function of rated thrust, total LTO NO_x emitted (kg), and as an emissions index to fuel (g/kg fuel). New PM LTO reporting requirements could take a similar format. Data on cruise CO emissions from aircraft would be most useful if collected directly from aircraft manufacturers on either on a grams per available seat kilometer (g/ASK) or grams per available ton kilometer (g/ATK) basis. Cruise NO_x and PM data could be reported using similar units or estimated from data provided by engine manufacturers as an emissions index (g/kg fuel).

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-0697.1 and excerpt number 4.

Commenter Name: Laurie Burt

Commenter Affiliation: Massachusetts Department of Environmental Protection

Document Control Number: EPA-HQ-OAR-2008-0508-0453.1

Comment Excerpt Number: 22

Comment: Massachusetts supports EPA's proposal to require aircraft engines to measure and record CO₂, CH₄, and NO_x emissions for the landing and takeoff cycle, but believes that

² FAA, System for Assessing Aviation's Global Emissions, Version 1.5, *Global Aviation Emissions Inventories for 2000 through 2004*, FAA-EE-2005-02, September 2005, revised March 2008, at page 10, at Table 3, available at http://www.faa.gov/about/office_org/headquarters_offices/aep/models/sage/.

reporting should be expanded to also require measurement of these emissions under other flight modes, including cruise conditions. (Preamble QQ(3)(h)). Specifically, aircraft emit gases and particles directly into the upper troposphere and lower stratosphere during the cruise portion of an aircraft's flight. These gases and particles alter the concentration of atmospheric greenhouse gases, including CO₂, ozone, and CH₄, which altogether contribute to climate change.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-0697.1 and excerpt number 4.

Commenter Name: Nancy N. Young

Commenter Affiliation: Air Transport Association of America, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0522.1

Comment Excerpt Number: 11

Comment: Given the direct relationship between fuel burn and CO₂, ATA submits that fuel consumption is the most appropriate means to measure aggregate “downstream” CO₂ emissions from commercial aircraft. As previously noted, well-established metrics, methodologies and reporting schemes exist that can provide accurate, meaningful and comprehensive data, while limiting the burden of reporting requirements on manufacturers and the commercial aviation community. For example, emissions may be derived from fuel consumption information using a direct conversion factor with the IPCC default emissions factor values (i.e., 3.16) or alternatively, the more precise figure derived from the relevant calculations (i.e., 3.1564) for jet fuel. Furthermore, as described below, aviation is already subject to a comprehensive and accurate “downstream” reporting regime that can be combined with these established conversion metrics and manufacturer data to provide a thorough, accurate and workable range of emissions data for purposes of any future regulatory or policy development.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-0532.1 and excerpt number 25.

Commenter Name: Alan H. Epstein

Commenter Affiliation: United Technologies Corporation (UTC)

Document Control Number: EPA-HQ-OAR-2008-0508-0570.1

Comment Excerpt Number: 2

Comment: Testing for Methane Should Not be Included in the Proposed Reporting Rule. To the best of our knowledge, a total of only a few grams of methane, CH₄, is emitted by our gas turbine engines per mission, and only during idle. At higher power levels, a jet engine is a net consumer of CH₄, as the ambient CH₄ in the atmospheric air ingested by the engine is burned in the combustion chamber. We estimate that even during short duration flights, a gas turbine airplane engine consumes hundreds of times more CH₄ than it produces during idle, so that aircraft are net CH₄ sinks rather than sources. In either case, these are tiny amounts. Each year, the entire US commercial aircraft fleet produces only about the same CH₄ as a herd of about 1000 cows (there are about 100 million cows in the US). Thus, it appears that measuring LTO CH₄ emissions from aircraft engines during engine certification is not meaningful in the context of overall GHG reporting and inventory. While methane may be an unburned hydrocarbon emitted in low concentration during gas turbine idle operation, it is not now singled out from the total hydrocarbons and explicitly measured, as no regulatory or technical reason presently exists

for doing so. At this time there is no established or approved standard for the measurement of methane from aircraft engines. We estimate that establishment of such a validated standard by a standards body such as the Society of Automotive Engineers, SAE E-3 1 committee would take about 2 years. P&W test stands are not now equipped to measure CH₄. Depending upon the accuracy required and the range of engine operation to be measured, P&W estimates that the cost of establishing and installing a validated measurement capability at about \$1-2M. Additional recurring cost would be on the order of ~\$100K per certified engine.

Response: Given that aircraft engines are likely net consumers of CH₄ and that manufacturers do not currently collect CH₄ data as part of existing test procedures, we are not requiring CH₄ to be measured and reported at this time.

Commenter Name: See Table 1

Commenter Affiliation:

Document Control Number: EPA-HQ-OAR-2008-0508-0635

Comment Excerpt Number: 66

Comment: As EPA notes in the proposed rule, within the mobile source sector, NO_x is a climate change pollutant unique to aviation. Unlike other mobile sources, aircraft emit NO_x in the upper troposphere and lower stratosphere where they are more effective at forming the GHG ozone, resulting in increased net positive radiative forcing.[footnote: Lee, D, et al., Aviation and global climate change in the 21st century, ATMOS. ENVIR. 2 (2009) (Ex 52).] Currently, aircraft manufacturers of turbofan and turbojet engines of rated output greater than 26.7 kilonewtons must measure and record NO_x emissions in each of the four landing/take-off (LTO) test modes.[footnote: 40 C.F.R. Part 87.] We strongly support EPA's proposal to require these manufacturers to report NO_x emissions under the GHG reporting rule, as they are not currently reported to EPA for public consideration as is the case with all other mobile sources. In addition, we urge EPA to require covered manufacturers to report NO_x emissions at cruise altitudes, where 90% of emissions occur. The IPCC concluded in its 2007 Fourth Assessment Report that high-altitude aircraft emissions have a significantly more harmful impact than aviation ground-level emissions, with the effects estimated to be about two to four times greater than those of aviation's CO₂ alone (even without considering the potential impact of cirrus cloud enhancement).[footnote: IPCC, Mitigation of Climate Change, Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (May 2007) at 49. For a more detailed discussion of the non-CO₂ impacts of aviation, see id., Box 5.1, at p. 331, available at <http://www.ipcc.ch>. See also Lee, D, et al., supra n. 322, Aviation and global climate change in the 21st century (presenting updated values for aviation radiative forcing based upon new operations data from 2000 to 2005 and concluding that total aviation RF (excluding induced cirrus) in 2005 was 3.5% of total anthropogenic forcing).] 324 Moreover, calculating aviation non-CO₂ cruise altitude emissions separately from those that occur during the LTO cycle is consistent with the IPCC GHG reporting guidelines.[footnote: 2006 IPCC Guidelines for National Greenhouse Gas Inventories, at p.3-57, available at http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_3_Ch3_Mobile_Combustion.pdf.] The data on aviation global warming pollutant emissions collected under the reporting rule will provide an important tool for identifying appropriate mitigation measures. Failing to include relevant data on aviation's most significant climate impacts could undermine efforts to use inventory information to develop effective solutions.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-

0697.1 and excerpt numbers 3 and 4.

Commenter Name: Steven D. Meyers

Commenter Affiliation: General Electric Company (GE)

Document Control Number: EPA-HQ-OAR-2008-0508-0532.1

Comment Excerpt Number: 27

Comment: EPA asks for comment on whether it should require that NOX emissions in the four LTO test modes and for the overall LTO cycle be reported directly to EPA as they are now not reported to EPA. GE does not believe that direct reporting to EPA is warranted as the requested data already is publicly available to EPA via the ICAO database and it is reported to FAA as a requirement of emissions certification. GE believes that a requirement for redundant reporting should be avoided as unnecessary bureaucracy.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-0697.1 and excerpt number 3.

Commenter Name: Steven D. Meyers

Commenter Affiliation: General Electric Company (GE)

Document Control Number: EPA-HQ-OAR-2008-0508-0532.1

Comment Excerpt Number: 26

Comment: The proposal requires a separate measurement and report for CH₄ for all turbofan and turbojet engines of rated output greater than 26.7 kilonewtons for which a manufacturer currently is required to measure and record criteria air pollutant emissions as part of the certification process. EPA specifically asks for comment on the degree to which engine manufacturers now have the needed equipment in their certification test cells to measure CH₄. GE Aviation does not currently possess equipment to measure and record CH₄ emissions from engines that we test. Moreover, GE also notes that in addition to requiring new hardware, we would be required to modify the existing computer software that we use to capture this data. GE further believes that the cost of direct measurement of CH₄ is not justified by the benefit because CH₄ emissions are believed to be very small. In light of this and since total unburned hydrocarbons (HC) already are reported during emissions certification, EPA likely could obtain a reasonable approximation of CH₄ emissions by using currently available data to determine the proportion of CH₄ in HC. Therefore, GE does not believe that direct measurement of CH₄ emissions is warranted.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-0570.1 and excerpt number 2.

Commenter Name: Alan H. Epstein

Commenter Affiliation: United Technologies Corporation (UTC)

Document Control Number: EPA-HQ-OAR-2008-0508-0570.1

Comment Excerpt Number: 1

Comment: LTO CO₂ is not now reported as part of the engine certification process. Should such reporting be required, the most accurate approach would be to calculate the CO₂ from fuel flow

measurements. While LTO CO₂ can be reported, we note that this information in and of itself cannot be used to estimate the CO₂ emitted over an aircraft mission, and indeed can be misleading. First, less than 10% of the total mission fuel is burned during the LTO cycle. Second, other factors such as propulsion system weight and drag, and interference drag between the propulsion system and airframe, exert significant influence over the total fuel burned by an aircraft. Starting from test stand measurements of engine fuel consumption, only the aircraft manufacturer has sufficient technical information (which frequently is proprietary) to estimate the total fuel burned, and thus the total CO₂ emitted, by an aircraft over a mission. Thus, the proposed reporting of LTO CO₂ has no value for purposes of GHG inventory. We suggest that aircraft level estimates and/or measurements of fuel burn and thus CO₂ is the only accurate approach to establishing aviation GHG inventory at the equipment manufacturer level, should that be desired.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-0532.1 and excerpt number 25.

Commenter Name: Steven D. Meyers

Commenter Affiliation: General Electric Company (GE)

Document Control Number: EPA-HQ-OAR-2008-0508-0532.1

Comment Excerpt Number: 28

Comment: EPA asks for comment on whether the reporting requirements should be applied to turbofan and turbojet engines of rated output less than or equal to 26.7 kilonewtons, turboprop engines, and turbo shaft engines which are not now regulated under 40 CFR 87 requirements for criteria air pollutant emissions. GE does not believe that mandatory GHG emissions reporting for these categories of engines is warranted. Emissions from these engine categories are estimated to be very small. For example, the Committee on Aviation and Environmental Protection within ICAO has estimated that only 1 % of total aviation NO_x is emitted from aircraft in the less than 20 seat class (Process, Assumptions and Results: NO_x Stringency Sample Problem – Round 2, CAEP Modeling and Database Task Force, 2007). Therefore, GE does not believe that the relatively small level of emissions involved justifies the time and expense of compiling the information.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-0453.1 and excerpt number 21.

Commenter Name: Andrew V. Cebula

Commenter Affiliation: Aircraft Owners & Pilots Association (AOPA)

Document Control Number: EPA-HQ-OAR-2008-0508-0400.1

Comment Excerpt Number: 1

Comment: General aviation (GA) is estimated to contribute less than one percent of all transportation sector GHG emissions. Piston powered GA aircraft contribute an even smaller amount; slightly more than one-tenth of one percent (0.13 percent) of total GHG emissions from the transportation sector and recent technological advancements are decreasing these emissions even further. Given the incredibly small GHG contribution from piston powered general aviation aircraft AOPA feels the fleet should be exempt from any current or future GHG inventory requirement or follow-on emissions regulations. EPA specifically asked for feedback on the

development of a Federal Test Procedure for piston aircraft engines in this NPRM. Given the incredibly small GHG contributions by these aircraft AOPA questions the overall benefit in developing a Federal Test Procedure for the measurement, recording and reporting of criteria air pollutant or GHG emissions from these aircraft. General Aviation is an Important Part of U.S. Aviation System The 600,000 plus pilots flying in the United States experience firsthand the safest and most efficient air transportation system in the world. GA aircraft are an integral part of the air transportation system that supports communities across the United States and provides essential air travel options that allow businesses to operate more effectively and efficiently with access to the over 19,000 landing facilities in the United States. Communities rely on GA airplanes and airports every day. General aviation provides vital services to individuals, families, churches, hospitals, colleges, small businesses, and tens of thousands of communities throughout America. From airborne traffic reporting to the overnight shipment of the most recent catalog purchases to finding new sources of energy, GA is helping to make it possible for communities to lead better, safer, healthier, and more productive lives. GA includes both business and personal transportation in aircraft that range from two seat piston-engine propeller aircraft to large business jets (excluding military and airlines flights). GA aircraft are involved in all civilian flight-training operations, medical evacuation and medical transport flights, law enforcement and firefighting operations, wildlife surveying and agricultural operations. Most of the nation's aircraft operate as general aviation aircraft. A typical general aviation aircraft is the Cessna 172, which has four seats, one piston engine, a 115 mph maneuvering speed and a maximum weight of 2200 pounds. Although the Cessna 172 is a typical general aviation aircraft, the fleet varies widely in aircraft size and capacities. General aviation comprises the majority of total aircraft operations in the U.S. According to the Federal Aviation Administration (FAA): * General aviation constitutes over fifty percent of the flying done in the U.S. and almost eighty percent of all U.S. departures. o On average a GA aircraft flies 127 hours annually. * General aviation transports approximately 166 million passengers annually. General Aviation's Impact on the Economy General aviation has an extensive positive impact on the U.S. economy. The direct and indirect effect of general aviation on the national economy exceeds \$150 billion annually.² Activities related to general aviation account for over 1.3 million U.S. jobs. The annual earnings of these employees are over \$53 billion. Economic activity within the general aviation arena includes the purchases of fuel, maintenance services, aircraft and related manufacturing and piloting services. Those employed by the general aviation industry work as pilots, flight instructors, mechanics, line workers and aircraft refuelers, avionics technicians, aircraft salespersons and manufacturers.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-0453.1 and excerpt number 21.

Commenter Name: Andrew V. Cebula

Commenter Affiliation: Aircraft Owners & Pilots Association (AOPA)

Document Control Number: EPA-HQ-OAR-2008-0508-0400.1

Comment Excerpt Number: 2

Comment: The energy conversion process that occurs during engine combustion on jet and piston aircraft is about 99% efficient; therefore, any consideration to reduce GFIG emissions from aircraft engines should center on increasing fuel efficiency. New engine and airframe technologies are helping to decrease General Aviation's (GA's) fuel consumption and emission contributions. The current use of light weight composite material in airframe construction reduces aircraft weight and increases speed and range over traditional aluminum airframes. A

traditional GA four-seat aircraft, such as the Cessna 172, uses 8.6 gallons of avgas an hour and cruises at 140 mph. A similar sized light weight composite aircraft with the same engine, such as the Diamond 40, is lighter and has a cruise speed that is 20 percent faster than the Cessna 172. If these two aircraft went on a 45 mile flight the Diamond 40 with its composite construction would use 11 percent less Mel than the aluminum Cessna 172, thus reducing GFIG emissions. Engine technologies that improve efficiency are slow to emerge due to the stringent FAA certification requirements that are in place to ensure safety. However, new engine technologies promise further increases in fuel efficiency and decreases in GHG emissions. Advancements such as the Full Authority Digital Engine Control (FADEC) offer increased fuel efficiency by automating the fuel delivery. These systems can increase fuel efficiency by 15 percent or more in new aircraft, and therefore decrease CO₂ emissions. Changes in the GA fleet mix are also resulting in a more efficient fleet. Light sport aircraft (LSAs) are providing a replacement option for some piston GA aircraft. LSAs are very light, weighing 1,320 pounds or less, and burn on average five gallons of fuel an hour. LSAs offer a replacement vehicle for older two seat GA aircraft, such as the Cessna 152. To continue with this example, most LSAs are 20 percent more fuel efficient than a Cessna 152. The FAA's Next Generation Air Transportation System (NextGen) promises further emission reductions by increasing the efficiency of the air traffic system and allowing more direct routing for aircraft. The cost-sensitive GA industry will have to bear an estimated \$2 billion in cost to transition to this system. Spikes in aviation fuel prices provide a good example of how cost-sensitive the industry is. Flight hours dropped almost nine percent after a twenty-five percent increase in fuel prices from August 2007 to June 2008. Any EPA regulation that results in a direct cost to GA will have a similar negative effect on the industry.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-0453.1 and excerpt number 21.

Commenter Name: Andrew V. Cebula

Commenter Affiliation: Aircraft Owners & Pilots Association (AOPA)

Document Control Number: EPA-HQ-OAR-2008-0508-0400.1

Comment Excerpt Number: 3

Comment: General Aviation Emissions Contributions Imperceptible Through 2050 The results of emissions inventories conducted on a national level by U.S. federal agencies such as the EPA,, government appointed research groups such as the Transportation Research Board (TRB) and industry level organizations such as the General Aviation Manufacturer's Association (GAMA) shows that GA's contribution to GHG emissions relative to commercial aviation and other non-road sources is exceedingly minor. Moreover, analysis of statistics directly derived from the Department of Transportation's (DOT) Bureau of Transportation Statistics (BTS) and EPA shows that GA is negligible in the overall fuel consumption from the transportation sector. Data garnered from the Intergovernmental Panel on Climate Change (IPCC) supports these findings on a global scale, showing that GA contributes almost imperceptibly to long-range 2050 forecasts for global fuel consumption and GHG emissions over a suite of scenarios of varying severity. These results are presented and discussed both individually and comparatively as follows. GA Emissions Compared to Aviation and Other Non-road Sources CO₂, the principle GHG, is emitted as a "natural by-product" from the combustion of fossil fuel in aircraft engines. The carbon stored in the fuel is oxidized, energy is released in the form of heat, and the aircraft is propelled by thrust (in the case of a jet engine) or rotating propellers (in the case of a piston engine). According to the GHG emissions inventory conducted by the EPA [footnote: Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2006, United States Environmental

Protection Agency USEPA #430-R-08-005. April 2008] the total amount of CO₂ emitted from the U.S. transportation sector in 2005 was 1874.5 Tg CO₂e [footnote: Value does not include bunker fuels]. The entire aviation sector, a subset of transportation, contributed 248.7 Tg CO₂e to this total. GA, a further subset of the transportation sector, contributed very little to CO₂ emissions – a total of 13.8 Tg CO₂e in 2005, 11.4 Tg of which resulted from jet-fueled GA aircraft and 2.4 Tg of which was emitted from avgas-fueled (piston) GA aircraft. [footnote: Teragrams of CO₂ Equivalent, the measure by which carbon dioxide is usually reported in greenhouse gas inventories. One teragram equals 1,000,000,000,000 grams, or 1,102,311 tons]. To get a sense of perspective on GA's CO₂ emissions a comparison to other non-road sources is helpful. Locomotive contributions totaled 45.1 Tg CO₂e and marine sources [footnote: including recreational marine vehicles] contributed 42.4 Tg of CO₂. Based on these data GA comprised only 5.54 percent of the aviation sector's contribution to CO₂ emissions in 2005, and on/v 0.74 percent of the overall total for the transportation sector. Of this 0.74 percent, 0.61 percent was from jet fueled GA aircraft operations and only 0.13 percent was from avgas (piston) fuel GA operations, slightly higher than one tenth of one percent of total CO₂ emissions for the transportation sector. The general aviation industry transports approximately 166 million people annually and contributes less than one percent of the transportation sector's total CO₂ emissions. [see DCN:EPA-HQ-OAR-2008-0508-0400.1 for pie chart showing data from EPA's transportation sector greenhouse gas inventory for 2005] A comparison of the aviation sector to other non-road sources in the inventory shows that locomotives contributed 2.4 percent to the total CO₂ emitted in 2005 while marine vessels contributed 2.26 percent to the total. Individually, these other non-road emissions sources emitted three times as much CO₂ in 2005 than GA. This information is summarized in Table 1 [see DCN: EPA-HQ-OAR-2008-0508-0400.1 for table showing the Results of EPA's Transportation Sector Greenhouse Gas Inventory for 2005] The values reported in the EPA's GHG emissions inventory also shows strong agreement with values from 2003 reported by the TRB [footnote: U.S. Transportation Sector Greenhouse Gas Emissions: Trends, Uncertainties and Methodological Improvements. 86th Annual Meeting of the Transportation Research Board, November 14, 2006.] According to this study, the transportation sector emitted 1702.5 Tg CO₂e in 2003, of which the aviation sector contributed 169.0 Tg CO₂e. Again, it is shown that GA contributes only a small amount to this total, equaling 9.4 Tg or 5.56 percent of the aviation sector's emissions. Of the overall total CO₂ emissions reported in this inventory, GA's contribution is only 0.55 percent. Another GHG inventory compiled by the TRB also shows GA's negligible impact when compared to other non-road mobile emissions sources. Locomotives added 39.6 Tg CO₂e to the reported total while marine vessels emitted 28 Tg, corresponding to 2.33 percent and 1.64 percent respective contributions. Similar to the results reported by the EPA, these sources in the TRB report emit 3 to 4 times as much CO₂ as GA sources. For ease of comparison, these results are reported in Table 2 [see DCN:EPA-HQ-OAR-2008-0508-0400.1 for table showing the Results of TRB Transportation Sector Greenhouse Gas Inventory Report for 2003] Additionally, results from a recent GHG inventory conducted by GAMA suggest that GA has an equally negligible effect on total GHG emissions [footnote: "The Greening of Business Aviation", Aviation Week] In this inventory turbine-powered GA aircraft contribute a scant 0.2 percent to GHG emissions in the U.S. annually, and burn approximately 1.6 billion gallons of fuel per year. Similar results are attained when evaluating global GHG and fuel consumption forecasts for the worldwide aviation sector. In their 1999 report, the EPCC presented aviation sector GHG emissions and fuel consumption Forecasts for the year 2050, including five different scenarios of varying severity [footnote: <http://www.aviationweek.com/aviaw/e/enericistory/genericjsp?channel=bca&id=news/bca0508p1.xml>, June 2, 2008 Aviation and the Global Atmosphere. Intergovernmental Panel on Climate Change, prepared in collaboration with the Scientific Assessment Panel to the Montreal Protocol on Substances that Deplete the Ozone Layer. Cambridge University Press,

UK, 373 pp., 1999] It is concluded in this report that, depending on the scenario chosen, GA fuel consumption will comprise 1.14 percent to 3.28 percent of the global total for the aviation sector in 2050. Additionally, emissions forecasts derived from these fuel consumption estimates suggest that GA aircraft will emit between 1.14 percent and 3.30 percent of the global CO₂ for the aviation sector in 2050. An important characteristic to take into account when interpreting these forecasts is that as the forecast scenario worsens, GA's contribution to the aviation sector total decreases; the lower values in the ranges reported above correspond to the worst-forecast scenarios. This implies that other aviation-related sources amount to at least 96 percent of aviation fuel consumption and GHG emissions, not GA. [see DCN:EPA-HQ-OAR-2008-0508-0400.1 for table showing the General Aviation Contributions to the Global Aviation Sector based on 2050 IPCC Aviation Forecasts]. Nationally, GA operations contribute 0.55 to 0.74 percent to the CO₂ emissions and 0.19 percent to the total fuel burn of the transportation sector, or less than one percent. When compared solely to the rest of the aviation sector, GA accounts for approximately 5.5 percent of aviation sector CO₂ emissions. It is shown that locomotives contribute between 3 and 4 times as much CO₂, and burn approximately 3 times as much fuel annually. Marine vessels have been shown to emit 3 times as much CO₂ as GA aircraft and burn as much as 6 times the fuel annually. It is estimated that GA will only contribute between 1 and 3 percent to the worldwide aviation sector's fuel consumption and CO₂ emissions in 2050. As is apparent in the national level data, this contribution to the global total is likely to be orders of magnitude smaller when accounting for all transportation-related sources. Overall, it is inherently obvious when evaluating the data that GA's impact on the global climate is currently and will continue to be exceedingly small. Based on what we currently know about the GHG contributions from the piston GA fleet, it would be very hard to justify developing a Federal Test Procedure (FTP) for piston GA aircraft and measuring, recording and reporting these emissions to the EPA. AOPA believes piston GA aircraft should be exempt from any currently proposed or future GHG inventory requirement or follow-on emissions regulations.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-0453.1 and excerpt number 21.

Commenter Name: Dan Elwell

Commenter Affiliation: Aerospace Industries Association (AIA)

Document Control Number: EPA-HQ-OAR-2008-0508-1140.1

Comment Excerpt Number: 3

Comment: Reporting of CO₂ emissions from an aircraft landing takeoff cycle (LTO) is unjustified. LTO measurements do not encompass CO₂ emissions for a complete aircraft flight, which is affected by variables such as propulsion system, drag, etc. Moreover, in compliance with the gas turbine engine certification process, engine manufacturers already report all relevant GHG except CO₂. The most exact reporting of CO₂ emissions is from aircraft mission fuel flow calculations. Aggregated annual fuel consumption, rather than reporting on a per flight basis, achieves equivalent overall accuracy, while being more cost efficient and protective of confidential business information. Due to its insignificant discharge, methane should be excluded from the final reporting requirement for gas turbine engines. Only a few grams are emitted during idle, and higher power engines are net consumers of methane in the atmosphere — hundreds of times more than what is emitted. Further, there is no recognized standard for measurement of aircraft engines' methane emission. Industry believes that NO_x emissions — from either the four LTO test modes or overall LTO cycle — need not be reported directly to EPA. This data is already available to EPA as it is reported to ICAO and to FAA for engine

emissions certification. Such redundancy of reporting is an unnecessary waste of resources.

Response: For the comment on CO₂ emissions, see response to comments for document control number EPA-HQ-OAR-2008-0508-0532.1 and excerpt number 25. In regard to methane emissions, see response to comments for document control number EPA-HQ-OAR-2008-0508-0570.1 and excerpt number 2. For NO_x emissions, see response to comments for document control number EPA-HQ-OAR-2008-0508-0697.1 and excerpt number 3.

Commenter Name: Jennifer McGraw

Commenter Affiliation: Center for Neighborhood Technology (CNT)

Document Control Number: EPA-HQ-OAR-2008-0508-0723.1

Comment Excerpt Number: 4

Comment: EPA has the opportunity to make existing data sources available that have not been in the past. For example, CNT has been in conversation with the Federal Aviation Administration in regard to data from its Aviation Environmental Design Tool / System for Assessing Aviation's Global Emissions (SAGE) model of air transport. The recently published Airport Cooperative Research Program Guidebook on Preparing Airport Greenhouse Gas Emissions Inventories recommends use of data from the FAA SAGE model and mentions that "FAA intends to make fuel burn and CO₂ data (totals for each airport) available," but those data have yet to be made public. For the government to have such a useful data source and not make it available to local governments, researchers, and others who would use the data to help plan emission reduction opportunities is a waste.

Response: As we described earlier, for turbofan and turbojet engines of rated output greater than 26.7 kilonewtons, we are finalizing that beginning in 2011 manufactures record and report CO₂ separately for each mode of the LTO cycle used in the certification test, as well as the entire LTO, by calculations of CO₂ from fuel mass rate flow measurements or alternatively according to the existing measurement criteria for CO₂. Also, we are requiring that engine manufacturers of these engines record and report NO_x emissions in the four LTO test modes and for the overall LTO cycle. Thus, more existing emissions data will be made available to the public when this rulemaking is implemented.

Commenter Name: Dan Elwell

Commenter Affiliation: Aerospace Industries Association (AIA)

Document Control Number: EPA-HQ-OAR-2008-0508-1140.1

Comment Excerpt Number: 4

Comment: AIA members believe that reporting should not encompass turbofan and turbojet engines with output rated equal or less than 26.7 kilonewtons, turboprop engines, and turboshaft engines not currently regulated for pollutant emissions under 40 CFR 87. Technical standards and procedures are not established for such regulation, and current standards would need significant modification for applicability. Additionally, different certification test stands are employed for these engine classes that would need to be equipped. Most importantly, these engine categories are evaluated by ICAO's Committee on Aviation and Environmental Protection as emitting only 1% of total aviation NO_x.

Response: See response to comments for document control number EPA-HQ-OAR-2008-0508-

Commenter Name: Nancy N. Young

Commenter Affiliation: Air Transport Association of America, Inc. (ATA)

Document Control Number: EPA-HQ-OAR-2008-0508-0522.1

Comment Excerpt Number: 9

Comment: Consistent with the overall approach to reporting by mobile sources that EPA has proposed, ATA supports reporting by aircraft engine manufacturers, which it believes will provide accurate, verifiable and readily available emissions data. Moreover, consistent with the intent of Congress, the reporting program can build upon long-established “downstream” manufacturer reporting requirements in CAA programs that regulate aircraft engine emissions. The existing program includes emissions standards, testing procedures, and emissions certification and compliance requirements based on emission rates over prescribed test cycles that can be extended to accepted fuel CO₂ metrics and conversion ratios for engines that burn jet fuel. More specifically, manufacturers of turbofan and turbojet engines of rated output (or thrust) greater than 26.7 kilonewtons are already measuring and recording CO₂ emissions as part of existing criteria air pollutant emission requirements for the landing and takeoff cycle. Thus, well-established metrics, methodologies and reporting schemes exist that can provide accurate, meaningful and comprehensive data, while limiting the burden of reporting requirements on the regulated community.

Response: We agree with ATA’s comment on the reporting program.

Commenter Name: Dan Elwell

Commenter Affiliation: Aerospace Industries Association (AIA)

Document Control Number: EPA-HQ-OAR-2008-0508-1140.1

Comment Excerpt Number: 5

Comment: AIA seeks clarification on whether this proposal is to apply to foreign-manufactured products/engines (with the manufacturer also having U.S. manufacturing installation) imported into the U.S. market. How would the foreign manufacturing facility/facilities need to report the emissions of the imported engines in accordance with the specific reporting requirements proposed by the EPA rule?

Response: For turbofan and turbojet engines with rated output greater than 26.7 kilonewtons that are or will be installed on certificated domestic aircraft (as opposed to foreign flag aircraft), the reporting requirements of this rulemaking will apply. For certificated domestic aircraft, the competent authority in the United States has issued (or will issue) a type certificate for the aircraft to operate in the United States, or this competent authority has issued an equivalent type certificate through a reciprocity agreement between or among nations (or between other competent authorities).

10. OTHER NONROAD ENGINES

Commenter Name: Laurie Burt

Commenter Affiliation: Massachusetts Department of Environmental Protection

Document Control Number: EPA-HQ-OAR-2008-0508-0453.1

Comment Excerpt Number: 20

Comment: EPA is proposing to exclude this group of engines from reporting under the GHG Reporting Rule. Although the engines in this group are small, the sheer number of engines results in significant GHG emissions. Furthermore, designers of these small engines have tried to optimize power, cost, and durability from small engines, resulting in fuel-rich combustion with higher emissions. Therefore, this sector is a significant contributor to overall air pollution and GHG emissions. Massachusetts recommends that manufacturers of this group of engines be required to measure and report their GHG emissions under the proposed rule. Massachusetts further proposes that the non-road small spark ignition engine sector should include equipment used for lawn and garden maintenance. (Preamble QQ(3)(f))

EPA proposed that the engines and vehicles that the commenter refers to (small spark-ignition engines, marine spark-ignition engines, personal watercraft, highway motorcycles, and recreational engines and vehicles) be covered by these reporting requirements, except for those produced by small entities. We are finalizing the proposed reporting requirements, with some revisions.

Commenter Name: John Foster

Commenter Affiliation: STIHL Incorporated

Document Control Number: EPA-HQ-OAR-2008-0508-0908

Comment Excerpt Number: 1

Comment: EPA Phase 3 requires a transition of engine testing from 40 CFR 90 to 40 CFR 1065. The EPA regulation requires this transition to be completed by 2013. Under the proposed Mandatory Reporting of Greenhouse Gases Rule, reporting of methane (CH₄) and nitrous oxide (N₂O) emissions shall begin in 2011. It is an unreasonable expectation by the EPA for outdoor power equipment manufacturers like STIHL to upgrade our test cells to allow measurement of methane (CH₄) and nitrous oxide (N₂O) emissions ahead of the transition to part 1065 test cell requirements. STIHL estimates its cost for the emission measurement equipment for methane (CH₄) and nitrous oxide (N₂O) emissions at approximately \$70,000 for each test cell. This cost is in addition to upgrade costs associated with 1065 compliance.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: John Foster

Commenter Affiliation: STIHL Incorporated

Document Control Number: EPA-HQ-OAR-2008-0508-0908

Comment Excerpt Number: 2

Comment: STIHL estimated the contribution of CH₄ and N₂O to our total CO₂ equivalent GHG emissions inventory based on the available emission data and our total annual production volumes of all EPA families. The results show that N₂O contributes less than 0.00002% of the total reportable GHG emissions. CH₄ contributes approximately 1.4%. Both of these contributions are well within the range of the measurement error for the main contributor, CO₂. Hence, we conclude that the measurement and reporting of CH₄ and N₂O in particular, places an

undue burden on manufacturers and does not result in any improved accuracy of the desired GHG inventories. STIHL contends that the reporting of methane (CH₄) and nitrous oxide (N₂O) emissions is an undue financial burden without justifying benefits thus an unreasonable expectation by the EPA. At a minimum, STIHL requests that the EPA suspend the reporting requirement for methane (CH₄) and nitrous oxide (N₂O) emissions of handheld engines until at least 2013 to coincide with the implementation of part 1065. STIHL further contends that the actual emission measurement of methane (CH₄) and nitrous oxide (N₂O) emissions for handheld engines is insignificant. If the reporting requirement for methane (CH₄) and nitrous oxide (N₂O) emissions is maintained, methane (CH₄) and nitrous oxide (N₂O) emissions should be a calculated result, NOT an actual measurement.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Timothy A. French and Joseph L. Suchecki

Commenter Affiliation: Engine Manufacturers Association (EMA)

Document Control Number: EPA-HQ-OAR-2008-0508-0424.1

Comment Excerpt Number: 10

Comment: Available testing data also indicate that CH₄ emissions from gasoline engines are very low compared to CO₂ emissions. Data from an emissions testing program completed by the Southwest Research Institute for the California Air Resources Board show that CH₄ emissions from small spark-ignited gasoline engines represented between 0.79% and 3.89% of total GHG emissions and averaged only 1.7% [see DCN:EPA-HQ-OAR-2008-0508-0424.1 Table 4 showing 2007 CH₄ and CO₂ emissions from low-emissions small off-road gasoline engines] [Footnote: Final Report; April 2004; SwRI 08.05734; prepared for the California Air Resources Board related to their Tier III Small SI rulemaking activity]. The program did not measure N₂O emissions. However, N₂O emissions factors from small gasoline engines published by the US EPA as part of the Climate Leaders Guidance Document indicate that N₂O emissions are lower for gasoline engines than for diesel engines. The emissions factor for gasoline engines is 0.22 g/gal while that for diesels is 0.26/gal. Therefore, the N₂O emissions for gasoline engines will be even less than those reported above for diesel engines. More definitive evidence that CH₄ and N₂O emissions from small gasoline-fueled engines are insignificant is demonstrated by a recent study of GHG emissions from three gasoline-powered pieces of lawn and garden equipment completed by Environment Canada. [Footnote: Graham, Lisa A., et al. 2006. Development of real World Representative Test Cycles and Measured Emissions Rates for Selected Off-Road Spark-ignited Engines. SAE Technical Paper SAE 2006-32- 0093. SAE International. 14pp.] The emissions data from that study, and summarized below in Table 5 [see DCN:EPA-HQ-OAR-2008-0508-0424.1 showing GHG Emissions for Small SI Engines using Certification Test Cycle from Environment Canada Study, g/kW-hr.] 2007 CH₄ and CO₂ emissions from low-emissions small off-road gasoline engines], indicate that CH₄ emissions rates for small spark-ignition gasoline engines were less than 0.16% of total GHG emissions, and that N₂O emissions are negligible and near zero. In terms of GHG emissions from SI engines, CO₂ is the only significant emission factor, and there is no reason to measure and report N₂O and CH₄. In sum, the available data and information clearly demonstrate that, although emitted by mobile sources, CH₄ and N₂O emissions represent a very small and insignificant portion of GHG gases, even when compared on a CO₂e basis. CO₂ emissions are clearly the dominant GHG, representing nearly 99% of the GHG emissions. In addition, CH₄ and N₂O emissions from all mobile sources have declined significantly and will continue to decline in the future as more stringent emissions standards for mobile sources decrease overall hydrocarbon and NO_x emissions.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: James McNew

Commenter Affiliation: Outdoor Power Equipment Institute (OPEI)

Document Control Number: EPA-HQ-OAR-2008-0508-1036.1

Comment Excerpt Number: 3

Comment: The nonroad small spark-ignition engine and equipment have been regulated by EPA since 1997. Last year EPA promulgated the 3rd phase of emissions regulations. Once fully implemented, the criteria pollutants, HC+NO_x will have been reduced by 95% from Class I & II, and 80% from engine class III – V. [See DCN EPA-HQ-OAR-2008-0508-1036.1 for table showing phase 3 emission standards. The class I – V engines are regulated by EPA for a combination of HC+NO_x and CO. The criteria pollutants under this reporting rule are CO₂, CH₄ and N₂O. The current EPA regulations for nonroad small spark-ignition engines require the collection of data for CO₂, but not the reporting of the data, via fuel consumption or measured emission. Since CO₂ data is already collected, OPEI member companies are able to begin reporting of CO₂ emissions but question the value to EPA since the amount of CO₂ emissions per gallon of fuel consumed is well established based upon sound scientific knowledge. Under EPA Phase II, all outdoor power equipment is regulated under CFR40-part 90. Late 2008, the new EPA Phase III regulation was promulgated creating a transition from the current part 90 test equipment and procedures to Part 1065. Therefore, the reporting of CH₄ and N₂O creates problems for OPEI members for several reasons explored below.

i) Timing Conflict with EPA Phase 3 Transition to Part 1065: The implementation of this new rulemaking creates a requirement for a transition for testing requirements from part 90 of the regulation to part 1065. This transition requires, in most cases, the replacement or major conversions of all the emissions test equipment. This transition is expected to be complete by 2013. The GHG reporting rule requires reporting of CH₄ and N₂O to start in 2011 which is two years ahead of the phase 3 requirements. This differential in timing will either cause an early pull-ahead of Part 1065 test cells, which is not feasible, or a costly revision to current part 90 test cells which in some cases is not possible.

Cost of Part 90 Test Cell Upgrades - A recent cost estimate obtained for upgrading part 90 test cells to allow measurement of CH₄ and N₂O is approximately \$70,000 per test cell. There are hundreds of test cells that would require these expensive changes, estimated in the multi-millions of dollars for a temporary change. At least one test equipment manufacturer has informed an OPEI member they would not be able to upgrade their older test cells to comply. The test equipment manufacturer stated that they are supporting the transition to part 1065 only.

(iii) Reliance upon emission factors in-lieu of CH₄ and N₂O Analyzers - For nonroad small spark-ignition engines, the emissions are measured in total HC+NO_x in g/kWhr. CH₄ is a small fraction of the total HC and N₂O is an even lesser fraction of NO_x. According to a Canadian study to support their GHG and Criteria Air Contaminant modeling (SAE paper 2006-32-0093), the emission of CH₄ and N₂O were “very low, almost not measurable”. [See DCN EPA-HQ-OAR-2008-0508-1036.1 for tables showing certification test cycles provided by commenter.] In fact, Canada discovered the factors being used in the model, 2.7 and 0.05 g/l of fuel consumed (respectively) were over estimating the total GHG inventory for the nonroad sector. Extremely sensitive analyzers would be required to measure these ultrasmall contributions. It is unclear at this time whether the analyzers for part 90 test cell conversions, if available, would be sensitive enough to measure these small contributions to the overall HC+NO_x emissions. For the Canadian study (SAE paper 2006-32-0093), to measure CH₄, gas chromatography with flame ionization detection was required and for N₂O, gas chromatography with electron capture

detection was necessary. This is laboratory grade equipment and not what would be typically included or integrated into the testing and reporting criteria under part 90 or part 1065 for criteria emissions. The \$70,000 per test cell estimate noted above does not reflect the laboratory grade equipment used within the Canadian study.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: James McNew

Commenter Affiliation: Outdoor Power Equipment Institute (OPEI)

Document Control Number: EPA-HQ-OAR-2008-0508-1036.1

Comment Excerpt Number: 4

Comment: B. RECOMMENDATIONS First of all, because of the great diversity of engines and engine uses for the nonroad small spark-ignition engine category, the usefulness of the emission data being reported is questionable. EPA currently has models for estimating the GHGs from this source based upon currently accepted and established emission factors being used to estimate the GHG inventory. The large cost to measure and report GHG emissions from mobile source, especially small class I-V SI engines, are not justifiable. Therefore the requirement for mobile sources to report GHGs should be removed completely and reliance upon the emission factors and fuel use estimates relied upon. However, should EPA chose to not rely upon the current GHG emission data for the nonroad category and still require reporting, for all the other reasons stated in the above sections, timing of the rule, cost to temporarily comply, and the small contribution of CH₄ and N₂O, OPEI Recommends that : 1) EPA exempt small engines from CH₄ and N₂O reporting; or 2) EPA utilize an emission factor for CH₄ and N₂O in g/kW-hr for small engines in lieu of reporting; or 3) At the minimum, EPA should first determine if standard measurement analyzers for CH₄ and N₂O are capable of measuring the very small contributions and delay reporting of CH₄ and N₂O for small engines until the determination of analyzer capability has been completed. Regardless, the requirement for reporting should not be imposed upon the nonroad small spark-ignition engine category until after the transition to part 1065.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpts 1 and 21.

Commenter Name: Kazuto Shimada

Commenter Affiliation: Industrial Products Company, Fuji Heavy Industries Ltd.

Document Control Number: EPA-HQ-OAR-2008-0508-0410.1

Comment Excerpt Number: 1

Comment: Fuji is a manufacturer of nonroad small spark-ignition engines and will be required to measure and report CO₂, CH₄ and N₂O emissions for each engine family under the proposed new rule. However, the amount of CH₄ and N₂O emissions are vastly lower in volume than CO₂ and could be neglected in terms of the greenhouse gases which affect on the global warming or climate change. Fuji requests that EPA consider removing the CH₄ and N₂O emissions from the subject emission gases required to be reported by manufacturers of small engines. Alternatively, Fuji has a suggestion that CH₄ and N₂O emissions would be measured by using certain representative engines out of nonroad small spark-ignition engines (e. g : most likely to be the largest sales volume) and figure out these gas inventories in the USA under the control of EPA activities.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Laurie Zelnio

Commenter Affiliation: Deere & Company

Document Control Number: EPA-HQ-OAR-2008-0508-0355.1

Comment Excerpt Number: 6

Comment: John Deere Power Systems (JDPS), a unit of Deere, is a leading producer of nonroad diesel engines and would be subject to the proposed requirement to measure and report CO₂, methane (CH₄), and nitrous oxide (N₂O) emissions as part of engine certification processes. Deere is a member of the Engine Manufacturers Association (EMA) and fully supports the comments submitted by EMA. In summary, we recommend that the EPA not require separate measuring and reporting of CH₄ and N₂O emissions during the engine emission certification process. Nonroad engine manufacturers currently report CO₂ emissions under the provisions of EPA's nonroad compression ignition engine regulations (40 CFR §1039.205) and associated emissions test procedures (40 CFR Part 1065). However, the current proposal to also measure and report CH₄ and N₂O is burdensome and without merit. Current GHG reporting protocols, such as EPA's own Climate Leaders, contain the means for estimating CH₄ and N₂O emissions from mobile sources.⁴ EPA should continue to utilize these estimates [Footnote: Direct Emissions from Mobile Combustion Sources, May 2008, EPA430-K-08-004]. Emissions of CH₄ and N₂O comprises a very small part of total GHG emissions, even after accounting for the higher global warming potential of CH₄ and N₂O compared to that of CO₂. EMA presented data from the Advanced Combustion Engine Study (ACES) documenting the very low and relatively constant level of CH₄ and N₂O emissions compared to CO₂ emissions. Deere recently completed similar measurements of CH₄ and N₂O emissions on several Deere engines. Emissions were measured on the 8-mode test used for emissions certification [See table in DCN:EPA-HQ-OAR-2008-0508-0355.1 for a summary of the test results]. CH₄ emissions were below the limits of detection when using the procedures proposed by EPA. N₂O emissions were insignificant (<0.30%) compared to already-reported CO₂ emissions, even after accounting for the higher global warming potential of N₂O compared to CO₂.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Laurie Zelnio

Commenter Affiliation: Deere & Company

Document Control Number: EPA-HQ-OAR-2008-0508-0355.1

Comment Excerpt Number: 7

Comment: In the event that EPA ultimately requires measurement and reporting of CH₄ and N₂O, such a requirement should only apply to engine certification tests run after the rule is finalized. Many of the Applications for Certification submitted each year are for 'carryover' families – engine families that were tested and certified in prior years. It would be prohibitively expensive to obtain new test engines, and run new tests, only to obtain 0.0 levels of CH₄ and extremely small levels of N₂O. Similarly, a requirement to measure and report CO₂ emissions should only apply to new certification tests.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: James McNew
Commenter Affiliation: Outdoor Power Equipment Institute (OPEI)
Document Control Number: EPA-HQ-OAR-2008-0508-0212j
Comment Excerpt Number: 2

Comment: We do fall under current EPA regulations. As a matter of fact, these products have been regulated three times in the last decade by the U.S. EPA and by California, and under those reporting requirements, we have already a compliance structure that we believe the U.S. EPA has properly established, and we would support the continuing thereof. But within that, as I said that we have the third round of regulations, in that third round of regulations, we call it "EPA Phase 3" for small off-road engines, and that rule goes into effect from basically 2010 through 2013. In that rulemaking, it required the manufacturers to switch from what is now Part 90 under the Federal rule to Part 1065. In that transition, it is going to require a wholesale changeover of the emissions test equipment. This particular rule happens to pull ahead that expenditure quite a bit. For a manufacturer to update his Part 90 equipment for every test booth, which most manufacturers have multiple test booths, some of them up to 100, 150 test booths, is around \$70,000 per test booth to change them over, to be able to report the CH₄ and N₂O as proposed in the rule. What we would propose, of course, is that we not have to update the Part 90 equipment and allow the transition to Part 1065 in order to prevent manufacturers from having to expend the additional monies, which would run in the millions of dollars, to update some of their test benches. As a matter of fact, some of the test benches are beyond update, as the manufacturers of those test benches have stopped supporting those benches due to the fact of the transition. So, therefore, it might even be difficult for us to be able to measure those particular emissions of HC₄ and N₂O.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: James McNew
Commenter Affiliation: Outdoor Power Equipment Institute (OPEI)
Document Control Number: EPA-HQ-OAR-2008-0508-0212j
Comment Excerpt Number: 3

Comment: It is unclear whether or not Part 1065 test benches with small engines will even be able to measure the HC₄ and N₂O because of the small, minute amount that that actually represents within the emissions. So, therefore, there needs to be some study as to whether or not for small engines, there is actually a measurable amount of HC₄ and N₂O that can be captured and accurately reported. With that said, OPEI would suggest three paths here, and it is sort of an "or path." First of all, because it is such a small amount of emissions, small off-road, from a gasoline standpoint, we represent a very small portion of the actual gasoline usage in this country. We are capable of reporting today and actually have to report within the Phase 3 rule, the CO₂ emissions from that. So it is not a problem to report the CO₂ emissions, which is the major greenhouse gas emissions from small off-road, but the HC₄ and N₂O are minute parts of the combustion process and may be very difficult. So we would just recommend, first of all, that you just exempt the equipment under Part 90 or Part 1054, which is the Phase 3, where all the Phase 3 equipment will be found, from reporting the HC₄ and N₂O. The second path might be to allow the industry and EPA to establish for those two emission criteria, a factor that would then

be added into the emissions inventory, if you still want to account for it. We do not believe it is going to move your decimal point up or down. We believe it is so small, it is kind of unmeasurable. The third thing, of course, would be just to align the date for compliance with the final implementation date of the Phase 3 rule, which would then allow manufacturers to include the measurement of HC4 and N₂O in the transition to Part 1065.

Response: See the response to comment EPA-HQ-OAR-2008-0508-0424.1, excerpt 1.

Commenter Name: Jack Gehring et al.

Commenter Affiliation: Caterpillar Inc.

Document Control Number: EPA-HQ-OAR-2008-0508-0499.1

Comment Excerpt Number: 2

Comment: Measuring GHG emission rates from diesel engines employed in non-road applications is both difficult and, as proposed in the Reporting Rule, ultimately ineffective for EPA's stated regulatory purposes. In order to make an accurate contribution to GHG emissions data for mobile sources, CO₂ emission rates from non-road diesel engines would need to evaluate and measure how a machine is used at the job-site/operations level. EPA would have to estimate the activity level of these non-road machines in the field, at the operational or job-site level. As-certified diesel engine emission characteristics, already well known by EPA and reported pursuant to established regulations, cannot be translated accurately to produce a real-world GHG emissions profile of that engine, because of the wide variety of non-road applications and use intensities. [Footnote: As EPA is aware, the number of engine families certified for non-road machine applications is much larger than the number of on-highway engine families. For example, according to EPA's own records for the year 2007, the number of non-road engine families certified in the U.S. was 666. Yet, the GHG emissions from non-road engines, in the aggregate, are only a fraction of those produced by on-highway engines. Non-road engine manufacturers produce and certify this many different engine families in order to optimize productivity and efficiency (which results in decreased fuel consumption and GHG emissions).] Further, GHG emissions from non-road diesel engines are a function of total system efficiency, not just the engine. So, net GHG emissions from a non-road machine cannot be determined by the baseline GHG emissions of the engine, but depend upon how the overall machine configuration and duty cycle combine to achieve a certain amount of work from a gallon of fuel used. Actual GHG emissions from non-road diesel engines are more closely related to the overall efficiency of the machine, as opposed to any measured GHG emissions from the engine. Therefore, because engine GHG emissions rates cannot accurately account for the efficiency of the total system or machine at the job-site level, the proposed Reporting Rule would, at significant cost to manufacturers and users, generate largely inaccurate (even misleading) GHG emissions data. At best, the data generated would add little value to the quality of GHG emissions inventory estimates for the relevant mobile sources. [Footnote: As Caterpillar stated in its comments to EPA's GHG ANPRM (see Caterpillar Inc.'s response to GHG ANPRM, Nov 28, 2008 - EPA-HQ-OAR-2008-0318), the focus of new GHG legislation or regulation efforts or incentives should be at the highest possible "level," in order to allow for the greatest technological innovations to occur. Innovations that have occurred to date in this space have lowered operating costs (fuel) and sought to maximize productivity of the job-site, i.e., at the operations level rather than the engine or individual machine level. Generally, the results have been significant reductions of GHG emissions for the total job (and also on a per unit of work performed basis). For the Reporting Rule's purposes, the most accurate data regarding mobile source GHG emissions would be obtained at this operational level.]

Response: EPA is interested in all available data relating to the emissions of mobile sources, including activity data. We also have concluded that the engine-level data that is the focus of this reporting rule is important.

11. OTHER MOBILE SOURCE COMMENTS

Commenter Name: See Table 1

Commenter Affiliation:

Document Control Number: EPA-HQ-OAR-2008-0508-0635

Comment Excerpt Number: 61

Comment: For other mobile sources, we support the reporting of all GHG emissions from engine exhausts and refrigerant sources.

Response: EPA is finalizing reporting requirements for all mobile sources except light duty vehicles, which are being addressed in another proposed rule.

Commenter Name: James McNew

Commenter Affiliation: Outdoor Power Equipment Institute (OPEI)

Document Control Number: EPA-HQ-OAR-2008-0508-0212j

Comment Excerpt Number: 1

Comment: First of all, from a State standpoint, it does not make sense to require individual State reporting of mobile sources, and I am speaking primarily from a manufacturing standpoint of small off-road equipment and engines. Basically, as a manufacturer, we do provide a separate vehicle or equipment for California. However, the Federal Clean Air Act, when it was written, Congress very wisely acknowledged the fact that California had been a trailblazer in the regulation of emissions. However, it put in there for the Federal rule that they would not be able to require additional vehicles or equipment in the rule. In 1990, they pulled the outdoor small off-road engines into the rulemaking, and, therefore, we believe that it does prohibit States from adopting rules that would cause a second vehicle. A patchwork of regulations would be devastating to the ability to be able to distribute nationwide products.

Response: This reporting rule does not introduce GHG emission standards, and thus does not affect production plans. Manufacturers will need to report GHG emission rates (or other appropriate information) regardless of whether they are also reporting similar data to California or other states.

Table 1

COMMENTER	AFFILIATE	DCN
Craig Holt Segall	Sierra Club	EPA-HQ-OAR-2008-0508-0635.1
Melissa Thraikill	Center for Biological Diversity	EPA-HQ-OAR-2008-0508-0430.1

Table 2

COMMENTER	AFFILIATE	DCN
Michael J. Stanton	Association of International Automobile	EPA-HQ-OAR-2008-0508-0476

	Manufacturers	
Robert J. Martineau, Jr.	Counsel, Waller Landsden Dortch & Davis, LLP	EPA-HQ-OAR-2008-0508-0414.1